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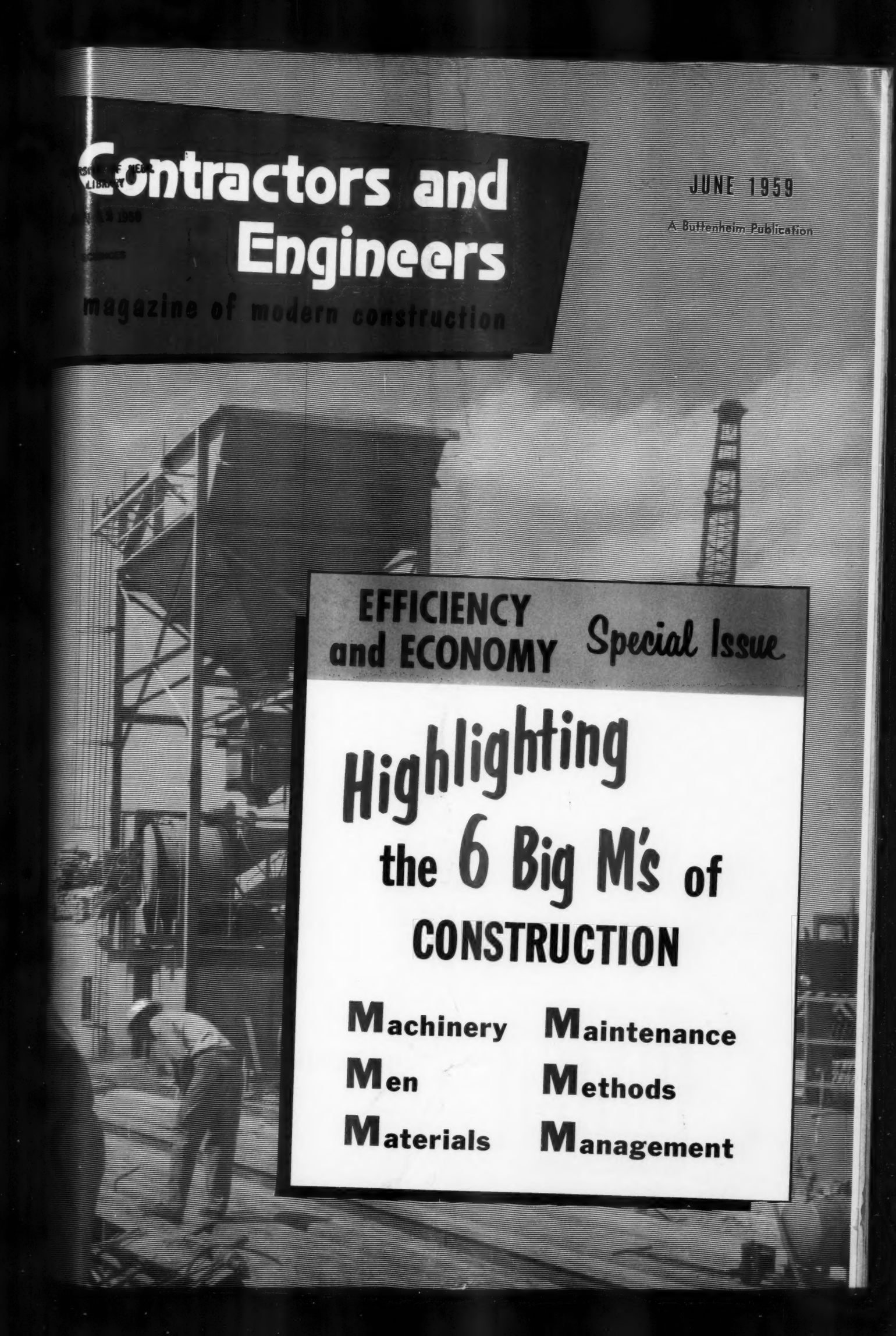
Contractors and Engineers

magazine of modern construction

JUNE 1959

A Buttenheim Publication



EFFICIENCY and ECONOMY Special Issue

Highlighting the 6 Big M's of CONSTRUCTION

Machinery **M**aintenance

Men **M**ethods

Materials **M**anagement

"...we tried out numerous compactors ...results were not satisfactory until we tried out your SPR-13 BMCO roller."

SAN XAVIER ROCK AND SAND CO.

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February 24, 1959

Browning Manufacturing Co.
P. O. Box 2707
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Gentlemen:

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SAN XAVIER ROCK & SAND CO.

By V. P. Stewart

V.P. Stewart-General Manager

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magazine of modern construction

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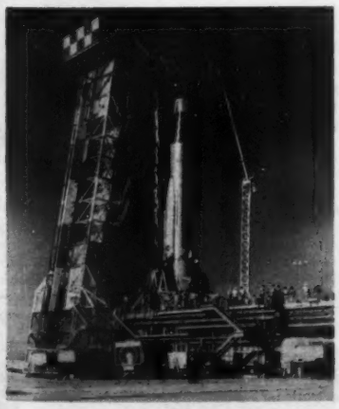

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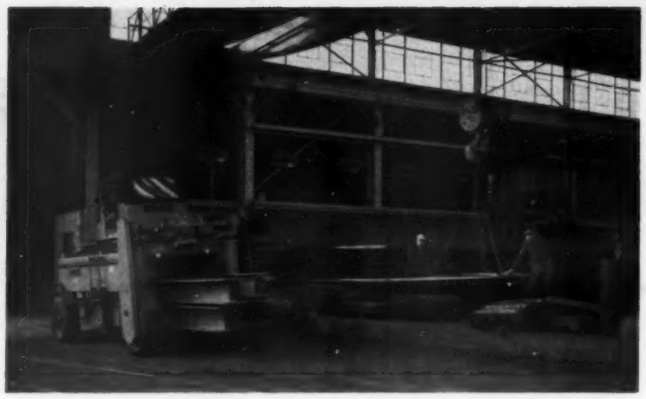
Editorial

Steel for construction



One of the most interested customers of steel—the construction industry—is watching with concern the current negotiations for a new wage contract between steel management and its union workers. As this is being written, there is no indication as to whether negotiations will break down, with a strike forthcoming on July 1 when the present contract expires, or a contract will be signed. A contract suitable to both management and labor may not necessarily be suitable to the customers who buy steel. Should these twelve biggest producers of steel and the United Steelworkers union agree on wage boosts, with a rise in the price of steel certain to follow, the public can well expect another jump in the cost of living.

Since 1949, the cost of living has gone up 24 per cent while the prices of steel increased 88 per cent—about four times as fast. Another price boost would mean that the construction industry would have just that much less money to put into structural steel for buildings, bridges, and other structures, or for curtain walls in commercial buildings. Manufacturers of construction machinery would have to charge more for those products that require steel sheets and shapes. Thus the contractor, having to pay more for the tools of his trade, would have to bid higher on work solicited. Public agencies or private owners with work to be done would get less for their money. And the public would get less for its contribution to construction.

Would a higher price for steel help either the producers or the union workers? Hardly, if at all. When steel was difficult to get during World War II and during the repetitive strikes of 1946, 1949, 1952, 1955, and 1956, the building industry was forced to turn to other materials of construction. American builders took a hint from their European counterparts, who have made tremendous progress in precast and prestressed-concrete construction. In Europe, steel is costly and difficult to obtain. Other substitutes such as aluminum, plywood, or plastics are offering the steel industry in this country stiff competition, and since 1950 are showing a much higher percentage of growth than the steel industry. Another shutdown in steel would force the construction industry to give more of its work to alternate designs and materials, or perhaps to buy more from abroad.

High production costs in this country are enabling foreign competition to undersell American concerns in the U. S. market. This situation exists in steel as in many other industries. A small but important building material such as the common nail is a typical example. Nails from Germany and Japan can be brought from overseas and sold to our midwestern market at a price significantly below that of any domestic brand. Already one-third of the U. S. market for nails is being supplied from abroad, while our own export of nails is dwindling away. Another example of keen foreign competition is that of a British firm underbidding American companies in the manufacture of large steam-turbine generators for use at U. S. dams.

Now is the time for both management and labor in the steel industry to read the writing on the wall.

President Eisenhower, aware of the gravity of the situation, urged both management and labor to show statesmanship in their crucial wage negotiations. He warned that every citizen could be hurt or helped by their decisions, and that the government could not stand still and do nothing if a pact was not presented that was fair to the public, as well as to employers and workers. The President did not say exactly what he meant by showing statesmanship. It could mean a hint to the steel companies to cut the price of steel in view of their recent good profit showing; and a tip to the steel union leaders not to act as if they were in a race with the auto and mine-worker unions to see which could get the biggest increase in pay for its members.

CONTRACTORS AND ENGINEERS

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Growing trend toward end-result spex

To the Editor
CONTRACTORS AND ENGINEERS
Dear Sir:

In your April issue you discussed on your editorial page procedures versus performance which we found to be very interesting in view of some research this office has recently done. You were discussing obsolete building codes that stress procedures rather than performance. We think, from the results of our survey, that there is a definite trend, at least among state highway departments, in favor of end-result specifications as opposed to methods and materials spex.

Sixty-two per cent of the states that responded to our survey on end-result specifications indicated that they are issuing the end-result specifications to contractors. All in this group felt that they would be prepared to help contractors train technicians in doing a certain amount of control testing which would be done for the protection of the contractors themselves.

It is quite obvious, of course, that if a contractor is going to be held to produce specified results, using his own ingenuity and experience to assist him in achieving these results as economically for him as possible, he will have to do his own materials testing to insure his work as he goes along.

Since this seems to be a pronounced trend, it is well for the contractor and civil engineer to begin to think more specifically about setting up his own materials laboratory for quality control and about training personnel for the testing procedures that must be followed. In addition to that, we feel the contractor will benefit tremendously from considering the establishment of a small field laboratory on the job site in order to make sure he has the minute-to-minute control over such operations as compaction to keep costs to a minimum and yet provide maximum strengths as required by specification.

Your editorial should do much to help bring to the attention of the construction field this new trend that promises to save time and money for the contractor and the public who will both pay for and use these facilities.

Yours very truly,
Thomas J. McNeil, V. P.
Soiltest, Inc.
Chicago 39, Ill.

Merritt-Chapman & Scott elects vice presidents

Joseph S. Myers and Harry W. Powell have been elected vice presidents of Merritt-Chapman & Scott Corp., New York City.

Myers, former assistant vice president, will be responsible for overseas development for the Construction Department. Powell, also a former assistant vice president, will be in charge of purchasing for the company's Construction Department, Marine Salvage Division, and Derrick Division.

A PUBLIC RELATIONS "OSCAR" from the U. S. Chamber of Commerce is accepted by Clifford S. Strike, second from right, president of F. H. McGraw & Co., New York City and Hartford, Conn. National chamber president William A. McDonnell, left, presents the trophy as Robert F. Kane, McGraw public relations director, and Frank J. McClean, right, company vice president, look on. McGraw is the first engineering firm to receive the award. According to a U. S. Chamber of Commerce official, McGraw's "well rounded employee communications program was highlighted by its company magazine, which did an excellent job of explaining and interpreting the company's business and our economic system."

- demonstrated under heavy truck traffic on Virginia's Route 304

Photograph

This heavily-traveled 7-mile section of State Highway 304 in Halifax County, Virginia, is served by a 2-course pavement of hot-mix Texaco Asphaltic Concrete.

Contractor: Thompson - Arthur Paving Company, Danville, Virginia.

This seven-mile section of State Highway 304 in Halifax County, Va., is further evidence of the rugged durability of hot-mix Texaco Asphaltic Concrete paving. Not only is this a heavily-traveled highway, but a large proportion of its traffic consists of trucks such as that shown in the photo. Resilient, joint-free Asphalt absorbs this punishing impact year after year, summer and winter.

Maintenance records of many State Highway Departments confirm Asphalt's lower upkeep cost.

Another fact highway engineers cannot afford to overlook is that heavy-duty Asphalt paving costs substantially less than rigid paving of comparable design—$50,000 a mile less in the case of the New Jersey Turnpike, America's most heavily-traveled toll road.

Helpful information on hot-mix Asphaltic Concrete and other types of Asphalt paving for highways, streets, airports and parking areas is supplied in the brochure, "Plant-mixed Texaco Asphalt Paving." Write our nearest office for a copy.

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For more facts, use Request Card at page 18 and circle No. 302

Machinery

High-powered rigs make time on expressway

Some 890,000 yards of rock, over a million yards of earth are moved by contractor on 4.62 miles of expressway

Use of additional equipment on the job proved the answer to higher production in earth and rock excavation on the Cross-Westchester Expressway in New York. Rock blasted out of a 35-foot-deep cut is being loaded to two big Euclid 16-yard rear-dumps by a P&H 1055 with 3½-yard bucket.

by ANTHONY N. MAVROUDIS
field editor

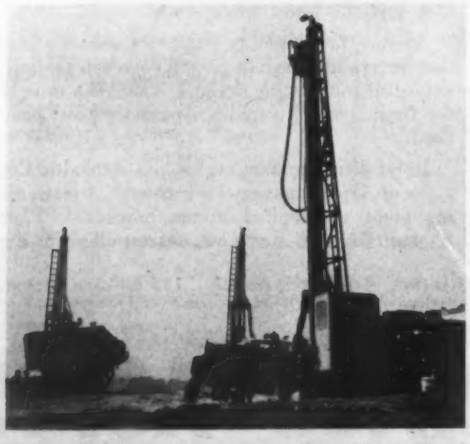
A contractor moving about 3,000 yards of rock per day on a 6-lane expressway job is making good time. But Merritt-Chapman & Scott Corp., New York, N. Y., wanting to better this production, supplemented its excavating and hauling fleets with additional rigs. The company's heavy-duty fleet, now shaping part of the new Cross-Westchester Expressway between Rye and White Plains, N. Y., has to move a total of 890,000 cubic yards of rock and over a million yards of earth for the project.

And in order to build the 4.62 miles of the expressway, M-C&S has to build more than three times that amount of road. Ramps, marginal roads, structures, and interchanges bring the total roadway length to some 15 miles. Since the contractor started work on the $14,272,510 contract, which runs through both urban and rural areas, the big equipment fleet has made rock and earth fly.

Equipment spread

Merritt began work with the drilling operations to remove the rock concentrated at the western, or White Plains, end of the contract. The drilling equipment included three Joy drills mounted on Caterpillar tractors, two Gardner-Denver Air Tracs, 12 Ingersoll-Rand wagon drills, and an Ingersoll-Rand Drillmaster. Because of the area being traversed, the spacing and loading of drill holes had to be varied. When working near built-up areas, the contractor is

Two Gardner-Denver Air Tracs sink blast holes near the western end of the contract, where there was a concentration of rock. Air is supplied to the drills by an Ingersoll-Rand Quarrymaster air-compressor unit located in the background.



Hefty drills in the rock spread include the Ingersoll-Rand Drillmaster, right, and two Joy drills on Cat tractors.

Elsewhere on the contract, another P&H 1055 shovel with 3½-yard bucket is used to load a Euclid. A total of 18 Euclid rear-dumps comprises the hauling fleet.

limited to eight drill holes per blast with a maximum of 10 pounds of dynamite per hole. Only one delay for each hole is permitted during these operations.

Drilling and blasting of the gneiss and limestone formations through the project's open areas is handled with normal procedures and larger blasting patterns. Atlas, Du Pont, and Monsanto explosives are being used.

The deepest rock cut on the job is about 35 feet, and M-C&S is sinking blast holes the full depth of the proposed blast. No secondary or bench drilling is done. Drills use carbide insert bits that are resharpened on the job and used again. The tractor-mounted Joy drills are drilling 3-inch-diameter holes, while the wagon drills sink 2½-inch blast holes. A total of eight Ingersoll-Rand 600-cfm Gyro-Flo air compressors—three of them are mounted on the Cat tractors handling the Joy drills—is spotted throughout the drilling area to supply air to the wagon and track drills. Supplementing this compressor bank is a self-propelled Ingersoll-Rand Quarrymaster compressor unit that generally works with the Gardner-Denver Air Tracs.

M-C&S is using four P&H 1055 shovels with 3½-yard buckets and a Lorain 820 shovel with a 2-yard bucket to excavate the blasted rock. Eighteen Euclid 16-yard rear-dumps, loaded by the shovels, haul the material to fill areas throughout the job. The contractor also has a Lima crane with a 100-foot boom and 4-yard dragline bucket to handle bridge excavation as well as the structure work.

A second crane, a Lorain 820 with a 60-foot boom, and with a Vulcan No. 1 hammer riding 65-foot-high pile-driving leads, is used to sink the 12-inch-diameter pipe piles required for the many overpasses and underpasses on the job.

Four tractor-dozers—a Cat D9, two D8's, and an Allis-Chalmers HD-24—are on the job to spread the fill. These rigs also handled the stripping during the early phases of work.

Thruways connected

The eastern end of M-C&S' contract will be linked with the recently completed New England Thruway by means of an elaborate interchange. This interchange will have about ½ mile of expressway in Rye, N. Y., and will require about 1½ miles of ramps. Other main arteries that will be connected to the M-C&S project by means of interchanges will be the Hutchinson River Parkway and the Bronx River Parkway.

When the expressway is completed, it will extend westward beyond the M-C&S contract, terminating at the New York Thruway near Elmsford, N. Y. This will provide a direct link between the New York and New England thruways and will connect upstate New York with New England by way of the Connecticut Turnpike.

The new expressway will have two 36-foot roadways, separated by a 14-foot depressed grassed median and two 4-foot-wide inside shoulders. Each roadway, consisting of three 12-

(*Continued on next page*)

For more facts, circle No. 303→

A P&H crane with an 80-foot boom and 4-yard dragline bucket excavates at the location of one of the 13 bridge structures on the job.

No. 955 excavates part of a total of 19,000 yd., preparing for base an area 20 ft. wide, 12-13 in. deep. Cuts are made by Cat No. 12 Motor Grader and windrowed. Job is part of a $1,828,366 project by Gulf Bitulithic Co. on U. S. 75, to be part of the Interstate Highway System.

Weather bad... No. 955 terrific... job on schedule!

Bad weather cut work days during the first six months to 20 per cent, but the highway project stayed on schedule. Reason: a Caterpillar No. 955 Traxcavator with Side Dump Bucket.

Gulf Bitulithic Co., Houston, Texas, first tried a drag line on a 2¼-mile widening job on U.S. 75 at Conroe, Texas. Production was poor in the shallow cut. Switching to a No. 955, five-yd. trucks were loaded in an average time of three minutes; four buckets to the truck.

"We increased production 25 per cent," says Superintendent Thomas "Red" Brown. "I like that Side Dump Bucket. You can't beat it!"

In-line loading of trucks with the Side Dump Bucket paid off in less traffic congestion on the busy highway, and it also avoided tearing up the subgrade with twisting and turning.

Says Operator F. H. Leggett: "I can move over 100 cu. yd. a day more with the side dump than with other loaders. It doesn't spill dirt because you don't have to jockey for position. A Traxcavator is easy to operate and I'm less tired at night. It's the best on the market."

Side Dump Buckets are available on all three Traxcavators: No. 977 (2¼ cu. yd.), No. 955 (1⅝ cu. yd.) and No. 933 (1⅛ cu. yd.). Other buckets, teeth, 'dozers and forks help make a Traxcavator the most versatile excavator-loader.

Ask your Caterpillar Dealer to demonstrate on *your* job how a Traxcavator can make money for you. He stands behind every machine he sells with round-the-clock service and parts you can trust.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

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NAME THE DATE... YOUR DEALER WILL DEMONSTRATE

(Continued from preceding page)

foot lanes of 9-inch reinforced concrete, will have 8-foot-wide stabilized shoulders. Shoulders will consist of a 1-inch asphaltic-concrete surface atop a 4-inch penetrated-macadam base course. Each traffic lane of the expressway will be sloped either toward the shoulders or median. The outside lane will slope toward the shoulder at a rate of 3/16 inch per foot, while the middle lane will slope toward the median with the same rate of slope. The inside 12-foot lane will be sloped toward the median at a rate of ¼ inch per foot of width.

Personnel

Over-all supervision on the project for M-C&S' Construction Department is being handled by G. G. Werner, Jr., vice president. Jack Donovan is the project manager and Roger Chapman, the project engineer for the contractor. The new interstate route, with plans prepared by Charles H. Sells, consulting engineer, New York City, is being built with 90–10 funds by the New York Department of Public Works. THE END

Case history

Bituminous-plant output licks tight schedule

Though materials for the mixing plant were extremely wet most of the time, the Unaka Paving Co.'s Cedarapids Model G60 plant produced from 200 to 225 tph for a bituminous paving job betweeen Mulberry and Lynchburg, Tenn. The contracting firm is located at Johnson City, Tenn.

With a tight 150-day schedule, it was necessary to get the plant into production fast. Because of the G60's easy portability, Unaka was able to locate the plant on the most advantageous site in relation to the job, and the plant was moved onto it and erected in less than a week.

In addition to the mixing unit, Unaka's G60 setup includes a Cedarapids 8828-E dryer, a DS-88 dust collector, and a hopper-feeder unit.

For further information about Cedarapids plants, write to the Iowa Mfg. Co., Dept. C&E, 916 16th St. N. E., Cedar Rapids, Iowa, or use the card at page 18. Circle No. 177.

Because of the portability of the Cedarapids plant, Unaka was able to locate the unit on the most advantageous site in relation to the job.

During an ordinary 1-hour stretch of work, the Trojan Model 404 loads a fleet of twenty-five 14-ton dump trucks with sand or gravel.

Case history

Loader reduces cost in material handling

For the short time a Trojan Model 404 tractor shovel has been at work in the El Rio plant of the Southern Pacific Milling Co., Ventura, Calif., the machine has greatly accelerated the bulk-material-handling system by reducing the time of the work cycle. The result: a substantial cost-reducing, time-saving economy.

Southern Pacific Milling is one of the largest suppliers of asphalt, concrete, and paving materials on the West Coast. The company operates a large fleet of trucks, paving units, cranes, loaders, and shovels. The Trojan 404 was purchased in September,

HARBERT USES TEXACO 100% ON FLORIDA PIPELINE PROJECT

TEXACO PLAN makes mobile lube rig a complete service station

Harbert Construction Corporation, Birmingham, Alabama, cites fine performance record of Texaco lubricants

Although their work on the natural gas pipeline for Florida ranges over 1,000 miles of pipeline, Harbert Corporation's equipment is never out of reach of complete lubrication. The reason: mobile lubrication rigs. And with the Texaco Simplified Lube Plan, each rig is completely equipped to service any lube point on any machine, wherever it's working. There's no time lost deadheading equipment back to a fixed service center. As a result, all equipment gets proper lubrication at the right time.

Systematic lubrication is easier with the Texaco Plan, too. The Texaco Plan indicates clearly what lubricant goes where, and how often, so equipment delivers peak performance. And simplified inventory saves man hours in storage and handling, cuts the chance of lubricant misapplication.

A Texaco Simplified Lubrication Plan can cut costs and boost performance on your next project. Just call the nearest of the more than 2,000 Texaco Distributing Plants, or write:

☆ ☆ ☆

Texaco Inc., 135 East 42nd Street, New York 17, New York.

1958, for the express purpose of stepping up the efficiency of the sand and gravel stockpile loading.

The work scope of the tractor shovel reportedly has enabled the company to retire the three obsolete 1-yard clamshell cranes that had previously handled the loading operations. The machine loads a 25-ton dump truck to capacity in 1½ minutes. During an ordinary 1-hour stretch of work time, the tractor shovel loads a fleet of twenty-five 14-ton dump trucks, loading some 900 yards of material during a full day's work cycle.

For further information write to the Yale & Towne Mfg. Co., Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 58.

The threat of enforced work stoppage, due to seepage from underground springs and accumulated rainfall, was answered by the use of nine Goulds pumps.

Case history

Battery of drainage pumps keeps job under way

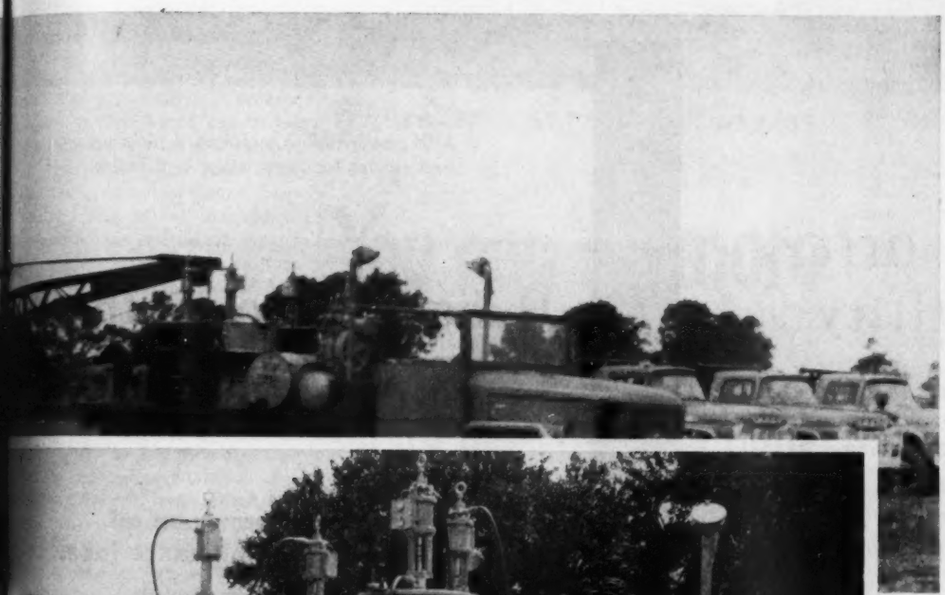
Balf, Savin & Winkleman, of New York City, contractors on the conduit phase of the new power program at Niagara Falls, N. Y., encountered unexpected trouble in water seepage when excavating a channel for twin water conduits.

The conduits are of formed concrete construction with a wall thickness of 4 feet. The channel of these conduits is 68 feet deep and 43 feet wide to provide a 15-foot covering over the maximum diameter of the conduit. Nearly all of this excavation was made through solid rock, and numerous underground springs were uncovered during the excavation. This water, plus accumulated rainfall, necessitated the use of drainage pumps so that construction could proceed.

The performance of the first three pumps installed led to the purchase of six additional units as the need for greater pumping developed.

The nine pumps used were Goulds Fig. 3135 with impellers for handling solids, and varied in size from 3 to 8 inches. Capacities range from 500 to 3,000 gpm when operating against a 200-foot head. All units are skid-mounted on heavy steel channel for easy handling by crane or dragline, and are powered by either GMC or Chrysler engines.

For further information write to Goulds Pumps, Inc., Dept. C&E, P. O. Box 330, Seneca Falls, N. Y., or use the Request Card at page 18. Circle No. 29.



Case history

Tree-removal operation at saving of $11,000

The use of a Bles Stump-Axe by the Tree Division of the Government of the District of Columbia, for a tree-removal operation in the D. C. area, resulted in a big saving for that agency.

According to Jerome Lowe, of the Tree Division, the estimated cost of the work, based on previous operational methods, was $18,000 plus. By using the Bles unit, installed on a crawler-type machine, the cost dropped to $7,200.

The Stump-Axe can be mounted on any ¾ or 1-yard shovel or crane. After stump removal, no backfilling is necessary, states the manufacturer.

For further information write to the Bles Stump-Axe Co., Dept. C&E, McLean, Va., or use the Request Card at page 18. Circle No. 35.

General Tire appoints

Trevor Michielson has been named Philadelphia division manager for the building materials division of The General Tire & Rubber Co., Akron, Ohio. He will direct sales of the division's products in the Philadelphia area, south and along the eastern seaboard.

COMPLETE SERVICE, ANYWHERE,

possible with a mobile rig and a Texaco Simplified Lube ion. A Texaco Plan cuts inventory so you can put every lubricant you need for every machine on a single truck.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For more facts, use Request Card at page 18 and circle No. 304

A 9′ power-sliding moldboard picks up and carries loads smoother and faster.

H-W Maintainer Offers Real Job Versatility

Whatever the job requirement . . . you can count on the versatile Huber-Warco M-52 Maintainer to turn in top performance.

The H-W Maintainer is a 45½ h.p. unit . . . weighs 6,250 lbs. . . . and features a torque converter. Working speeds range from 1.7 to 8 m.p.h., and a travel speed of 21 m.p.h. permits quick movement from job to job. The Maintainer is an all-purpose, year 'round performer, capable of outperforming many machines that are larger, heavier, more costly, slower, more expensive to operate and more limited in use.

With hydraulically cab-controlled attachments, the Huber-Warco Maintainer will perform service as a lift-loader, bulldozer, broom, snow plow, scarifier, side dozer, berm leveler and patch roller. This versatility makes it an ideal machine for all types of construction and maintenance assignments.

Your Huber-Warco distributor will be happy to give you complete details about the M-52 Maintainer . . . in fact, he will even give you a demonstration of the outstanding performance of the Maintainer. Your Huber-Warco distributor can arrange terms up to 36 months for you on the purchase of a new machine, or provide you with a rental unit. See him soon.

Huber-Warco on the job

M-52 Maintainer . . . a top performer on all construction and maintenance jobs.

Hydraulic attachments permit the H-W Maintainer to perform service as a bulldozer, scarifier, berm leveler and lift-loader.

Huber-Warco Company

MARION, OHIO

For more facts, use Request Card at page 18 and circle No. 305

HUBER W WARCO

Ditcher digs canals in widths to 22 feet

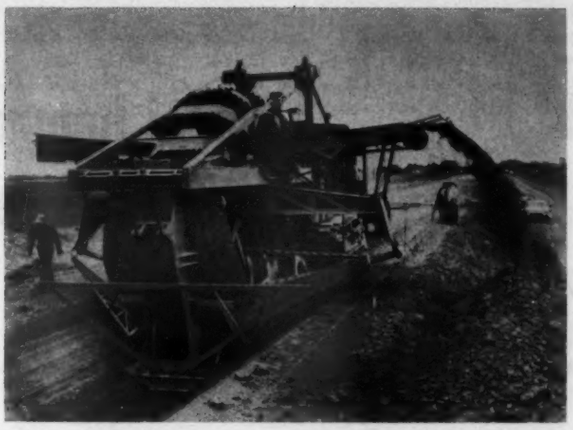
Cutting its way through the soil of the Rio Grande Valley, a giant ditcher is said to be setting new records in irrigation-system construction. Manufactured by Gar Wood-Buckeye, the 55-ton ditcher digs trapezoidal irrigation canals in widths up to 22 feet. Owned by the Cameron County, Texas, Water Board, the Model 330 has an average speed of 7 fpm, and under full work load will excavate up to 900 cubic yards per hour.

A concrete boat, or slip form, is attached to the ditcher by a cable, providing an effective method of excavating and lining simultaneously.

The machine can be quickly converted to a pipeline or deep-sewer ditcher, digging a straight ditch up to 5½ feet wide and 11 feet deep. This version reportedly has operated at speeds up to 35 fpm.

The Model 330 can discharge spoil from either side of the machine or from both sides at once. A semi-crawler unit, it is equipped with an Allison Torqmatic 3-speed transmismission and Allison torque converters.

For further information write to Gar Wood Industries, Inc., Dept. C&E, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 33.



The Gar Wood-Buckeye 330 digs trapezoidal irrigation canals for a vast project in Cameron County, Texas. The 55-ton giant can dig a ditch 22 feet wide. During a single day's operation, it reportedly excavates enough dirt to fill a fleet of a thousand large dump trucks.

Comprehensive analysis of business failures

"The Failure Record Through 1958," a 15-page analysis of business failures in the United States, has been published by Dun & Bradstreet, Inc. This annual study covers business and resultant creditors' losses from 1920 through 1958. To round out the picture over this period, failures and creditors' losses are also analyzed by location, industry, age, size, and cause.

There were 2,162 failures in construction in 1958, with 872 failures for general building contractors; 1,169 for building subcontractors; and another 121 for other contractors. The total liabilities in this field were $115,115,000. The greatest percentage of construction failures, 51.6, occurred in firms that were five years old or less.

Incompetence was the underlying cause for 40.8 per cent of these construction failures. Running next were unbalanced experience, 22.8 per cent; and lack of managerial experience, 19.8 per cent. The average liability per failure was $53,245.

A list of apparent causes states that inadequate sales accounted for 38.5 per cent of failures; competitive weakness, 28.8 per cent; and receivables difficulties, 17.6 per cent.

Single free copies of the booklet are available from the Public Relations and Advertising Department, Dun & Bradstreet, Inc., 99 Church St., New York 8, N. Y.

LeTourneau-Westinghouse names manager

LeTourneau-Westinghouse Co., Peoria, Ill., has named Wayne H. McGlade to the post of product-development manager for earthmoving and related equipment. McGlade was formerly assistant to the executive vice president.

Atlas Copco news

Atlas Copco AB, Stockholm, Sweden, has elected Marcus Wallenberg chairman of the board of directors to succeed Walter Wehtje, who has retired. Other elections include that of Wils Vult von Steyern as deputy chairman and Marc Wallenberg, Jr., to the board of directors.

Where tires are put to the test

You can do more for less

on Tru-Seal Tubeless Rims

Wherever there's work to be done that's really tough on tires—you can be sure of this: You'll get more out of your tires – at lower cost – when they're mounted on Tru-Seal Tubeless Rims by Goodyear.

Tru-Seal is the only practical way to seal a multiple-piece rim. And, like all Goodyear rims, it provides other dollars-and-cents advantages:

Unusual Strength: An exclusive double-welding process and added support at points of greatest stress make present-day Goodyear Rims far stronger than previous rims.

Ease of Tire Mounting: No tube and flap troubles.

Special Tools: Goodyear provides both hydraulic and hand tools especially made for off-the-road equipment.

Bond-a-Coat Finish: This protective coating affords long-lasting resistance to rust and corrosion.

If you have a rim problem, talk it over with the G. R. E. (Goodyear Rim Engineer). He'll save you time and money by helping you select the type and size of rim best suited to your needs. Write him at Goodyear, Metal Products Division, Akron 16, Ohio, or contact your local Goodyear Rim Distributor.

New Tru-Seal Rims—available in sizes 12.00 and up, including all earth-mover and grader sizes. This rim is similar to multiple-piece rims now in use—PLUS air-tight Tru-Seal rubber ring which compresses into sealing groove when tire is mounted.

Buy and Specify **GOODYEAR** *More tons are carried on Goodyear Rims than on any other kind*

METAL PRODUCTS DIVISION

Tru-Seal—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

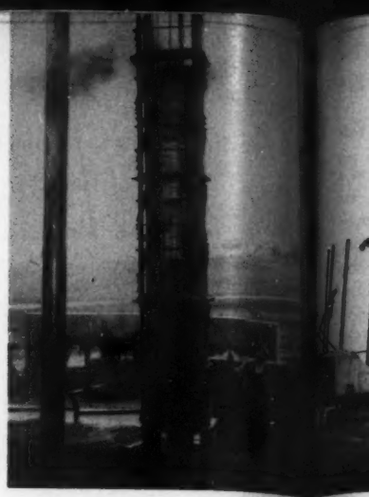
Watch "Goodyear Theater" on TV—every other Monday, 9:30 P.M., E.D.T.

For more facts, use Request Card at page 18 and circle No. 306

Machinery

Diesel hammers post good record

Contractor uses two diesel hammers to drive ten miles of H-pile and tubes for eight steel-girder bridges

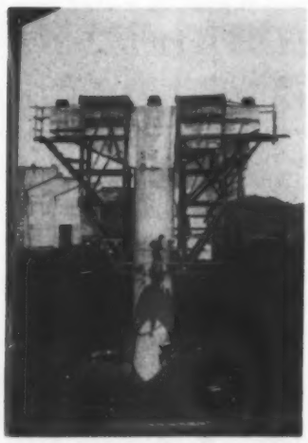


A McKiernan-Terry DE-30 diesel pile hammer drives a 12-inch Taylor Spiral-Weld pipe pile for the abutment of one of the grade separations being built on Interstate 1 in Nebraska. Diesel hammers, used for virtually all driving for the eight bridges in this section, turned in a good performance.

Diesel-powered pile hammers proved their worth on a big bridge contract on a Nebraska interstate highway.

The two diesel hammers on the job drove some ten miles of both H-pile and steel tubes. The diesel hammers, hard-hitting and dependable, cost little to operate. And they helped make money for the contractor.

Capital Bridge Co., Inc., Lincoln Nebr., the holder of the contract, is no stranger to diesel hammers. The



Working from scaffolding, men clean down the concrete surface of a high 1-column pier. These piers provide minimum obstruction for debris carried by creek flooding.

first contractor in Nebraska to use diesel, the company made the switch in 1957. Whenever it is more economical, however, they use steam hammers.

The McKiernan-Terry hammers were put to the test on the foundation work for eight bridges on Interstate 1. The bridges were awarded under four separate contracts totaling $1.8 million. The construction is a part of the highway department's program to link the two cities of Omaha and Lincoln with controlled-access 4-lane divided highway.

The contracts awarded to Capital involved some good-sized bridges. The largest was a 717-foot twin bridge that carries the expressway over a railroad, a country road, and a creek. Rolled I-beams and—on the longer spans—plate girders carried the 6-inch reinforced-concrete deck. All eight of the bridges were of steel-girder construction.

Most of the block footings of the piers were supported by either H-piles or poured-in-place piles. These were driven to depths of about 40 to

"1960 MOD

BIGGER! BETTER! STRONGE

The first "1960 Model" Marions—35-M, 37-M and 43-M—are coming off the assembly line.

They have major, new features. Significant improvements. Refinements that make these machines work harder, faster, longer. Easier to use, to adjust.

Marion sincerely believes these bigger, better, stronger machines give you more for your excavator dollars—in work output and long years of dependability.

Review the partial list of new features on the "1960 Models" of these famous Marions—they are new reasons you should put them on your jobs today. See your Marion distributor.

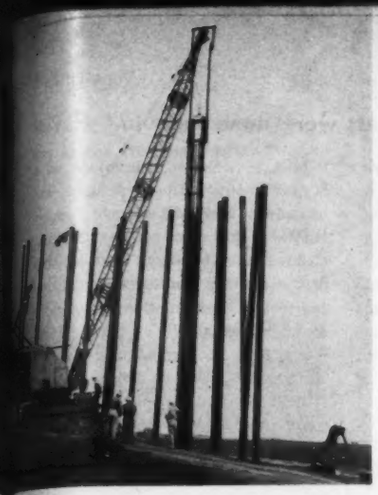
35-M

crawler mounted truck crane wagon

New 1960 Features of Marion 35-M and 37-M

1 - Improved digging brake; increased
justment accuracy, more positive
2 - Safer, more positive swing lock with
pendent air control.
3 - Stronger, longer-life hoist pinion
gear.
4 - Bigger, stronger hoist friction
5 - Greater protection for swing
air lines.
6 - Greater flexibility and smoothness
swing clutch.
7 - Higher speed, more rugged boom
8 - Increased overhead visibility for
boom work.
9 - Full-revolving fairlead with anti-
bearings.
10 - Gantry improvements for truck crane
hoe.
11 - Hoe front-end refinements.

MACHINE	Shovel Capacity	AVAILABLE AS				
		Hoe	Crawler Crane	Truck Crane	Wagon Crane	Special Crane
35-M	¾	Yes	Yes	Yes	Yes	—
37-M	—	—	—	Yes	Yes	—
43-M	1	Yes	Yes	Yes	Yes	—
362	1½	Yes	Yes	—	Yes	Yes
93-M	2½	Yes	Yes	—	—	Yes
101-M	3	—	Yes	—	—	—
111-M	4	—	Yes	—	—	—



To make the driving job move faster, the contractor positioned the 57-foot piles in 5-foot-deep augered holes. The McKiernan-Terry DE-30 hammer rides 70-foot leads handled by a Link-Belt Speeder with 70-foot boom.

60 feet to get the necessary bearing. In general, the driving was hard. The piles had to penetrate tight clays ranging from a light color to dark gray. Sometimes the piles ran into gravel mixed with the clay; occasionally they hit nested boulders.

In one particular spot, some rubbery blue clay refused to be penetrated by the steel tubes. Repeated attempts were made with both the diesel hammer and a drop hammer to get the pile in below 20 feet, but it would just spring up again. The hammer would gain 6 inches on the pile, and then, even with the hammer still knocking it, the pile would rise up. It appeared that the buoyant force of the liquid clay was greater than the combined force of friction and the impact of the hammer. The problem was solved by switching from tubes to H-piles for that particular footing.

For practically all of the pile driving, the contractor used two McKiernan-Terry DE-30 diesel hammers. Each one, rated at 16,000 to 18,000 foot-pounds, weighs only 5 tons.

These hammers weigh less than comparable steam hammers, and their light weight allowed the contractor to use smaller cranes. One-yard cranes easily handled the leads.

Since the hammer carries its own fuel, there was no need for dragging compressors or steam generators around—and no need for operating or maintaining this expensive equipment. The contractor estimated that using one diesel hammer instead of steam equipment cut one man off his payroll. Fuel consumption, too, was a lot lower than for steam equipment. Each hammer burned about 1 gallon of diesel fuel per hour.

Two American 399 cranes lift a 100-foot, 17.5-ton plate girder into position to complete a 130-foot span of one of the eight bridges covered by the contract. A third American is placing diaphragm steel. Cranes work with 65 feet of boom.

Equipment and materials

- 2 McKiernan-Terry DE-30 pile hammers
- 4 American 399 cranes
- 1 P&H 455A crane
- 1 Koehring 1-yard crane
- 2 Link-Belt Speeder Model 90's
- Thor air-powered impact wrenches
- H-beams furnished by U. S. Steel Corp.
- Spiral-Weld tubes furnished by Taylor Forge & Pipe Works

In soft driving, it is often a problem to start the diesel hammer. Without sufficient ground resistance, the piston of the hammer does not "bounce" back high enough to reactivate the fuel pump. On this particular job, however, this was no problem. The hard driving actually caused the ram to have a longer stroke and deliver a harder blow.

The number of blows struck per

(Continued on next page, col. 4)

←For more facts, circle No. 307

D" MARIONS

GE MAJOR IMPROVEMENTS!

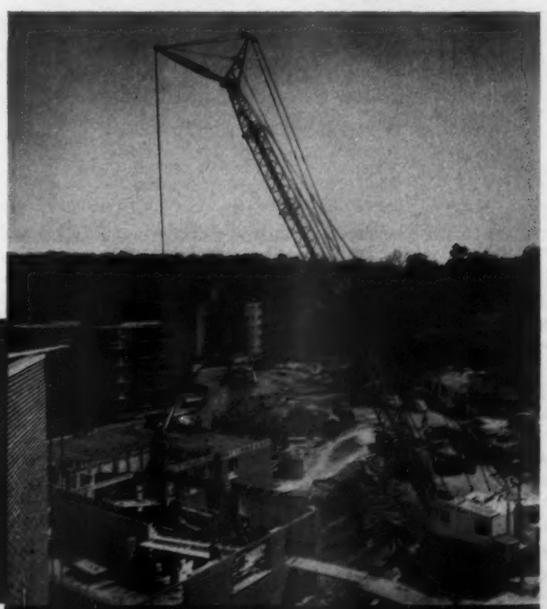
37-M
truck crane wagon crane

43-M
crawler mounted truck crane wagon crane

New Features Marion 43-M

1-Much bigger lifting capacities without outriggers.
2-Faster, smoother swinging through use of conical, adjustable hook rollers mounted on tapered roller bearings.
3-Split lagging for increased job adaptability and ease of maintenance.
4-Bigger diameter boom hoist clutch standard for truck crane, optional for crawler mount.
5-Improved operator visibility; cab forward 19".
6-Improved two-position gantry.
7-Full-revolving fairlead mounted on tapered roller bearings.
8-Pin-connected, folding crane booms for crawler machine.
9-40-foot basic boom for truck cranes with deep throat for high work; maximum boom and jib combination 160 feet.
10-Wider clutch and brake housing for smooth, positive control.

Really big capacity where it does you the most good - over the side without outriggers!



MORE with MARION

MARION POWER SHOVEL COMPANY
MARION, OHIO, U.S.A.
A Division of Universal Marion Corporation

The Bantam Model C-350 crane-excavator features an 8-ton lifting capacity; digging depths of 18 feet 10 inches with the optional long backhoe attachment; independent travel, swing, and hoist; and a 2-speed travel design.

Case history

Medium-duty excavator gets work done fast

The Miller Trenching Co., of Des Moines, Iowa, had a call to put in a 48-foot-long 5-foot-deep sewer-line hookup. The firm's crawler-mounted Schield Bantam Model C-350 with hydraulic-actuated bucket was loaded on a tilt-top trailer, driven 4 miles to the job site, and unloaded; it dug the trench and was loaded back on the trailer—all in about 35 minutes.

Also, in what was described as a "typical day," the machine was loaded at the yard, driven 9 miles through the city of Des Moines, cleaned out a basement cave-in; was driven another 4 miles where it dug 350 feet of 42-inch-wide 3-foot-deep footings through a foot of frost; and was driven another 4 miles back to the yard. All this work was accomplished in 5 hours.

For further information write to the Schield Bantam Co., Dept. C&E, 219 Park St., Waverly, Iowa, or use the Request Card at page 18. Circle No. 87.

GIANT PRODUCTION!
LOW-COST OPERATION!
GET 'EM BOTH IN THE MIGHTY D9!

From every angle the Cat D9 Tractor is a "take-charge" giant . . . capable of giant production. Here's 30 tons of steel engineered and manufactured into a rugged, reliable machine that refuses to falter when the going gets tough.

The heavy-duty, seven-roller track frame is built to take the punishment of heavy loads. "Hi-Electro" hardening of wear areas of the undercarriage gives extra dependability. Extra-strong frame and final drive form a backbone built for long life under the severest operating conditions.

The turbocharged D9 Engine puts out 320 HP at the flywheel. 'Dozing, pulling or pushing — this means peak production on any job. Despite its size and power, the D9 is easy to operate. Hydraulic boosters provide power for steering, braking and master clutch use. Finger-tip control helps keep the operator at top efficiency.

The D9 is easy and economical to maintain. The exclusive Caterpillar oil clutch operates up to 2,000 hours — one whole season — without adjustment. And it needs adjustment no more frequently than ordinary clutches need replacement. Proper track tension is quick and easy to apply with Cat hydraulic adjusters.

NEW FEATURES FURTHER REDUCE MAINTENANCE COSTS: Lifetime lubricated rollers and idlers — tested for 2½ million hours—need no servicing until rebuilding. New dry-type air cleaner removes at least 99.8% of all dirt and dust from engine intake air throughout every service hour. Cleaner can be serviced in 5 minutes; filter element re-used.

A complete line of attachments and scrapers make the mighty D9 a versatile profit-maker. Scrapers available for use with the D9 are the No. 463 Series C, which carries 22 cu. yd. struck, 28 heaped, and the No. 491 (27 cu. yd. struck, 34 heaped). Fast loading, efficient ejection and spreading step-up cycle time with either one. A full line of bulldozers and controls insures the right combination to handle any 'dozing job. Two rippers are available . . . the No. 9 for normal ripping and the Kelley Ripper with single tooth for extra-deep penetration.

These are just a few of the plus features found in the D9 Tractor—features that make the D9 "King of the Crawlers." The real proof is in a demonstration on your job. See for yourself. Call your Caterpillar Dealer now.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

GET TOP PRODUCTION WITH A TAKE-CHARGE D9

For more facts, use Request Card at page 18 and circle No. 308

(*Continued from preceding page*)

minute by a diesel hammer is generally less than that made by a comparable steam hammer. The DE-30 works at from 48 to 52 blows per minute. The slower rate naturally increases the driving time.

On this job, the Taylor Spiral-Weld piles were started by placing them in about 5-foot-deep augered holes. The holes held the 1-foot-diameter piles tightly in place until the hammer could get on them. No mandrel was used in the driving.

The tubes were held in place in pile clusters in wet holes by a checkerboard pattern of planks. Piles were started in the soft mud with a drop hammer.

Once the piles had been driven and the footings poured, the piers started springing out of the ground like mushrooms. In a period of about six months, the contractor put up 50 piers and 22 abutments.

A P&H 455A dragline changes its position to widen the creek channel passing under the bridge.

With the piers up, the setting of the 1,931 tons of structural steel in the eight bridges moved along swiftly. Field connections on the rolled I-beams, as well as on the plate girders, were made with high-tensile steel bolts. The girders were topped with a 6-inch reinforced-concrete deck.

H. A. Sydik was general superintendent for Capital Bridge. Supervising the project for the Nebraska Department of Roads was project engineer H. S. Little. The division construction engineer is Frank Schnitiker. THE END

Case history

Burner halves fuel costs on Utah asphalt plant

For the past 3 years, Hydro oil burners reportedly have been consistently cutting fuel costs by 50 per cent at the Salt Lake County asphalt plant near Salt Lake City, Utah.

A Hydro burner fires a Pioneer plant and reportedly halves fuel costs.

The plant was burning No. 2 fuel oil at the rate of 2 gallons per ton of mix at 300 degrees F on a 45-tph basis. After the installation of the Hydro Burner, No. 5 bunker oil was used at the rate of 1½ gallons per ton of mix at 375 degrees F on a 90 to 95 tph basis.

With these units, states the company, there is no smoke problem and no burner cleaning. The same fire brick that was in the combustion chamber 3 years ago is still in use and in excellent condition today.

For further information write to the Utah Hydro Corp., Dept. C&E, 751 West 8th South, Salt Lake City 4, Utah, or use the Request Card that is bound in at page 18 of this issue. Circle No. 74.

Parker Seal names five

Staver Hydraulics Co., 397 Pennsylvania Ave., Waverly, N. Y., has been made a distributor of Stat-O-Seals and Gask-O-Seals, industrial seals produced by Parker Seal Co., division of Parker-Hannifin Corp., Culver City, Calif.

Carpenter Bearing Co., 1308 W. Second St., Odessa, Texas, has been franchised as a distributor of Parker Seal synthetic rubber O-rings.

Al Xander Co., 523 Wright St., Corry, Pa., will also carry Stat-O-Seals and Gask-O-Seals, as will Roger Zatkoff Co., 9624 Winston Ave., Detroit, Mich., which will, in addition, handle Parker O-rings.

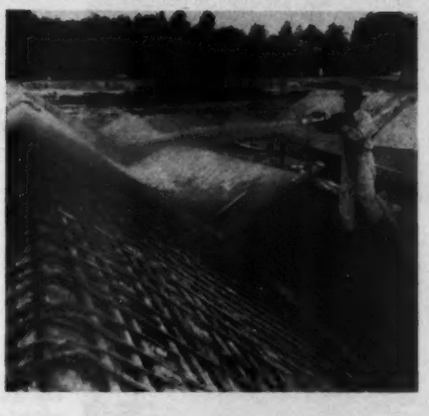
Jay Berwanger, Inc., 340 W. Huron St., Chicago, will also carry Parker synthetic rubber O-rings.

Massey-Ferguson appoints

Cornelius Whetstone has been appointed marketing manager for Massey-Ferguson Industrial Division, Wichita, Kans. He will supervise over-all sales, merchandising, and advertising operations of the division. Whetstone has served on the convention committee of the Associated Equipment Distributors.

For more facts, circle No. 309→

Case history: A nozzle man applies low-slump, high-strength, quick-curing concrete to the odd-shaped roof of the Lenox Square Shopping Center in Atlanta, Ga. Out of sight on the ground below is the machine that makes this pneumatic concrete placement possible—the True Gun-All Model G-4. According to project planning engineer Victor Schroeder, besides contributing to the development of previously untried forming techniques, the use of the True Gun-All unit permitted placing low water-cement-ratio concrete in difficult locations. For further information write to the **True Gun-All Equipment Corp.**, Dept. C&E, P. O. Box 2526, Tulsa, Okla., or use the Request Card at page 18. Circle No. 142.



MOTO-LOADER POWER PAYS OFF ON NEW JERSEY SEWER JOB

"Our Moto-Loader has at least 40 per cent more power than our other loader equipment," reports Gil Sprague, Superintendent for J. & S. Construction Company. Working on a $1,700,000 sewer job for the Eatontown Sewage Authority, J. & S. use their Moto-Loader ML-153A to speed backfilling operations. Mr. Sprague says, "I particularly like the one-foot control of direction and acceleration. With both hands free for steering, the operator can maneuver better and work faster."

An example of this faster work is the backfilling operation itself. The Moto-Loader fills 500 feet of six-foot trench every eight hours. Excess fill is loaded into trucks and hauled away. The Moto-Loader fills a 6½-ton truck in 2 minutes.

The Moto-Loader can increase your daily output, too. Available in 1¾ yd. and 2 yd. capacities, it features: toggle-in hoist lever for no-hands constant hoisting force, torque converter, planetary wheel drive, four wheel brakes, and a special arm design for maximum visibility and safety. Add it up and you have real performance to speed any digging or loading operation.

For more details, see your Lorain distributor. Ask about his on-the-spot parts and service facilities that have such an added plus value when you buy Lorain.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN®

ON THE MOVE

PLANTS in Lorain, Elyria and Bucyrus, Ohio.

PRODUCTS — Power shovels, cranes, draglines, clamshells, and hoes on crawler mountings from ⅜ to 2½ yard capacity · Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes · Rubber tire front-end Moto-Loaders in 1¾ and 2 yard models.

OUTLETS — Lorain products sold and serviced by 249 distributor outlets throughout the world.

This contractor-built stiffleg was the big machine for the high bridge project on the Missouri River near Forest City, S. Dak. With its 200-foot boom and 50-foot jib, it lifts steel 250 feet for the bridge.

Machinery

Giant amphibious derrick makes 250-foot lifts

When you need a rig that's not on the market, build it yourself. At least, that's what John F. Beasely Construction Co. figured when a crane was needed that could place heavy bridge steel up to 250 feet above land or water.

The result of the company's labors was a towering stiffleg derrick that could operate either on tracks or pontoons. With its 200-foot boom and 50-foot jib, it set much of the steel for a high bridge crossing the Missouri River near Forest City, S. Dak. By using the mammoth rig, the contractor eliminated the need for traveling derricks and also reduced the amount of falsework necessary to support the long spans.

The bridge, one of the largest between the Mississippi River and the West Coast, was made necessary by the reservoir, backed up by Oahe Dam at Pierre, S. Dak. The 4,583-foot-long

B.F.Goodrich

ON-THE-JO

TIRE SERVICE

as fast and
expert as y
can get!

We give you the kind of tire
you want and need becau
B.F.Goodrich Contractor Servic
are completely equipped with t
power tools—hydraulic crane
matic wrenches, bead jacks, e
B.F.Goodrich Tire Service m
trained to handle any proble
matter how big the tire, how
the equipment, how complic
repair.

Result: costly downtime is
minimum, the project stays on
ule and you save on tire and
nance costs!

as close as
your phone

The next time you need on
tire service, call us. We'll be
when and where you need us—
you days and dollars.

Ask about our special pr
B.F.Goodrich preventive tir
nance. No obligation, of cours

Specify B.F.Goodrich
Tubeless or tube-type ti
when ordering new equip

See us for B.F.Goodrich off-the-road tires and service, or check the Yellow Pages of your phone book for a more complete listing in your area.

Enter the B.F.Goodrich Truck Tire Mileage Contest. You may win a Thunderbird or Corvette or one of 310 other prizes. See us for your free entry blanks today.

B.F.Goodric

The stiffleg, which works on land or water, is on rails mounted on a pontoon barge for setting steel for the river spans. At right is one of the two Manitowocs also used to place steel. These cranes set steel for all but one of the land spans—a job the stiffleg handled.

The big stiffleg has a lifting capacity of 150 tons at a 50-foot radius. A 5-drum hoist controls the three load lines, boom line, and swing line. On land, it travels on 800 feet of track and handles the individual 56 × 52-foot track sections.

bridge carries the two lanes of U. S. 212 over the rising waters of the Missouri.

Its seven cantilever through-truss spans are flanked on one side by three continuous plate-girder spans and on the other side by six similar plate-girder spans. The truss spans vary in length from 376 to 500 feet. Four of them contain 250-foot-long suspended-truss sections.

The steel is supported by 2-column reinforced-concrete piers with footings resting on clusters of 14-inch H-piles driven to a maximum depth of 140 feet into Pierre shale. The tallest pier, from top of footing to cap, is 152 feet.

The Bridge Division of the South Dakota State Highway Commission designed the bridge to get the most out of its bridge-building dollar. The repetition of identical members in the

(*Continued on next page*)

B.F.Goodrich

ALABAMA
ADams 5-2571
FAirfax 2-0361
LIberty 6-5271
JEFferson 6-2497
HEmlock 3-2681
AMherst 2-1661
PLaza 8-8312

ARIZONA
ALpine 3-6168
MAin 3-3881

ARKANSAS
POplar 3-8618
TEmple 6-9334
SUnset 3-4124
FRanklin 4-5066
409
JEFferson 4-5123

CALIFORNIA
FAirview 4-4701
SPruce 3-2811
HIllside 2-5700
ADams 3-5216
Richmond 9-6171
LAmbert 2-1005
HIghgate 4-2800
EMerson 9-4648
BEkin 4-7271
GIlbert 2-3811
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JAckson 7-2121

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Tires and service

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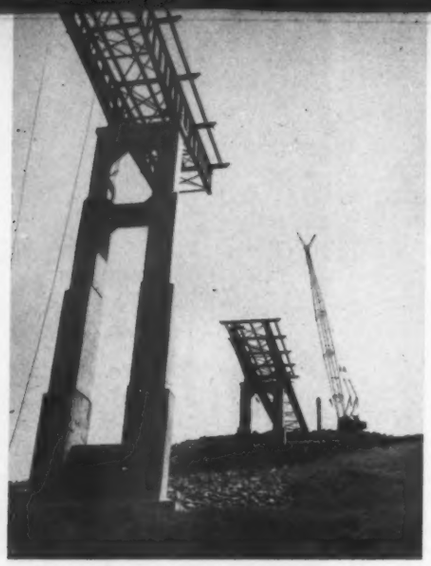

Steel for the plate-girder approach spans is set by a Manitowoc 3900 with 140-foot boom and 30-foot jib. It worked with as much as 200 feet of boom and 30 feet of jib to set the high steel.

(Continued from preceding page)

superstructure reduced the cost of fabrication. The design of the substructure made possible a maximum re-use of forms, thus reducing the cost of building the piers. Partially because of these factors, the preliminary estimate of the bridge, $5.3 million, was reduced to an actual cost of $4.7 million.

Soon after work on the substructure was completed by Massman Construction Co., Kansas City, Mo., John F. Beasley Construction Co., Dallas, started on the $3 million contract for the superstructure.

When Beasley completed this work he floated cranes and falsework about 400 miles up the river to start the steel on an even larger bridge. This 5,059-foot bridge carries the highway across the Oahe Reservoir at Mobridge, S. Dak.

Moves on land or water

On land, the big derrick traveled on about 800 feet of track. The track, erected in 56×52-foot sections, was set in place by the derrick itself. Weighing 65 tons each, these lifts were the heaviest the big rig had to make. The wheels on the derrick were arranged so that it could move onto a track set at right angles to the tracks it was riding. Power was supplied to the wheels by two GM 180-hp diesel engines with torque converters.

The derrick had to be moved onto a pontoon barge to set the steel on the river span. The big rig traveled from land tracks to a section of tracks mounted on the barge, which was floating in a dredged slip.

An American 5-drum hoist controlled the three load lines, boom line, and swing line. The main load line, located at the end of the boom, was capable of lifting 150 tons at a 50-foot radius. Its 16-part line contained over a mile of cable. On the jib was a 5-part 50-ton-capacity load line and a 1-part 25-ton whip line.

The big derrick, with its 250-foot reach, set the steel on the river span and one of the land spans. It also moved and set in position the steel erection bents on three of the spans.

Two Manitowoc 3900 cranes set the remainder of the steel. Rigged with up to 200 feet of boom and 30 feet of jib, the two cranes set all but one of the land spans.

Erection bents

A maximum of four erection bents was used in making the 425-foot spans. Of the contractor's own design, these 2-column steel bents contained their own built-in hydraulic jacks for exact adjustment to get required camber in the bridge. The jacks were founded on a 4-column framed subtower driven into the riverbed, or on steel grillage beams on the riverbanks. On the 500-foot spans that were cantilevered from the 425-foot spans, no erection bents were necessary.

Two 50-foot members of the bottom chord were joined to make a 100-foot span and cut down on the erection bents. The two members were bolted together at their ends and reinforced with an underslung truss. The truss consisted of an H-beam, extending straight down from the bolted connection, and two diagonal steel members branching out from the lower end of the H-beam to the ends of the 100-foot chord member. The joining of the two members made it possible for the erection bents to be placed 100 feet apart.

Field connections on the truss spans of the bridge were made with high-tensile steel bolts. On the continuous plate-girder spans, the connections were welded. As many as five Lincoln welding machines were put to

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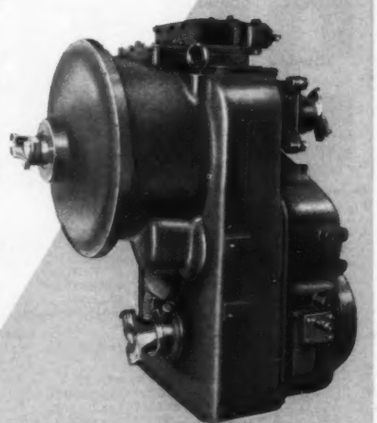

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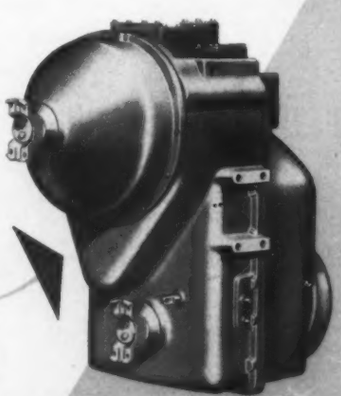

HYDRA-DRIVES CDB Transmission

- Four speeds forward and reverse.
- Power shift in each range both forward and reverse.
- For equipment up to 250 h.p.

HYDRA-DRIVES Torque Converter

- 3-to-1 torque multiplication.
- Available separately, or with Hydra-Drives Transmission.
- For vehicles up to 500 h.p.

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An Allis-Chalmers HD-21 tractor with side boom moves a 20-ton plate girder from a storage area to a point beneath the bridge for a lift by one of the cranes. Field connections at the end of the girder will be welded.

work on the project to get the big welding job done.

Deck work

Tufcor corrugated metal decking simplified the forming of the lightweight concrete deck slab. The metal decking was welded to the stringers and then covered with a 5¼-inch layer of reinforced Haydite concrete.

All deck materials were fed onto the bridge from one end. In order to speed the delivery of concrete and reinforcing steel across the bridge, the contractor devised two self-propelled rigs. They traveled at speeds of up to 15 mph on rails mounted on posts on each side of the 26-foot roadway. Mounting an improvised crane, one of the rigs carried such materials as decking, reinforcing steel, and handrails. The other rig carried four 1-yard buckets for placing concrete.

Personnel

J. W. Fitzgerald was superintendent on the job for John F. Beasley Construction Co. On the job for the state highway department was resident engineer Kenneth Long.

K. R. Scurr, bridge engineer of the highway department, prepared the basic and preliminary reports on the bridge. THE END

New B-E research center

A research center will be built at the Oak Creek test ground of Bucyrus-Erie Co., South Milwaukee, Wis. The first of a group of structures planned for the 125-acre site adjoining Lake Michigan will be a one-story building, of concrete-block construction, that will have 7,200 square feet of floor space.

The company will transfer its research department from the main plant to the new building during the summer. All testing equipment and machine tools will be transferred.

Roebling appoints Nelson

The Construction Materials Division of John A. Roebling's Sons Corp., Trenton, N. J., has appointed Arnold S. Nelson its Chicago district sales engineer. He will supervise sales in several midwestern states surrounding Chicago, as well as in the nearby portion of Canada.

Caterpillar promotes

R. M. Woodbridge has been appointed general supervisor of the agricultural, logging, and construction markets in the Sales Development Division of Caterpillar Tractor Co., Peoria, Ill. Prior to his new appointment, Woodbridge had been supervisor of the motor-grader and wheel-type tractor division of Sales Development.

HRB offers review data on highway research jobs

"Highway Research Review, Number 4B" provides a listing, classified by subject, of highway research projects in progress or reported by state highway departments, federal bureaus, colleges and universities, and other agencies. Complete data is given on such subjects as aggregates; bituminous mixtures and surfaces; bridges; concrete; pavements; soils; joints; traffic; and highway laws and regulations.

The 220-page bulletin is priced at $4 and may be obtained from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

Waukesha buys own stock

The Waukesha Motor Co., Waukesha, Wis., has purchased 88,500 shares of its own stock, representing approximately 16 per cent of the total amount outstanding. The purchase was made from The Dyson Corp., a private holding company.

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① **IMPROVED LIFT ARMS** of sturdy rectangular design are set wide, tied into rail around *top* of body shell. This greater angle makes *dumping 25 per cent faster*, reduces line pull on cable up to 22 per cent. Dump cycle is faster, simpler, safer.

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③ **9° SLOPE IN FLOOR** in trailer's nose section provides "built-in" dump angle, helps load move out faster. Also keeps overall trailer height down, so there's no problem with overhead loader restrictions. Rounded inside body shell eliminates corners in which load may become packed or snagged. Unit has 10-12 cubic yard capacity.

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Machinery

Separate batching setups supply two paving spreads

The larger of the two batch plants supplying the Empire State Expressway job is this one, which is turning out batches to a White truck for the spread paving the 24-foot-wide slab of the 36-foot roadway. Aggregates are charged to the Blaw-Knox bins by a Barber-Greene 30-inch conveyor.

By doubling up on batching setups and paving spreads, S. J. Groves & Sons Co., Syracuse, N. Y., was able to hit a fast working pace on paving a 13-mile section of the Empire State Expressway, and to handle the two adjacent contracts as if they were one job. Linear-foot production hit a peak of 2,080 feet of 24-foot-wide pavement during a 10-hour workday.

The 6-lane project, part of the 175-mile $250 million toll-free road between the Pennsylvania state line and the Thousand Islands Bridge near Alexandria Bay, N. Y., parallels U. S. 11. Both contracts for Groves' 13-mile section total about $14 million.

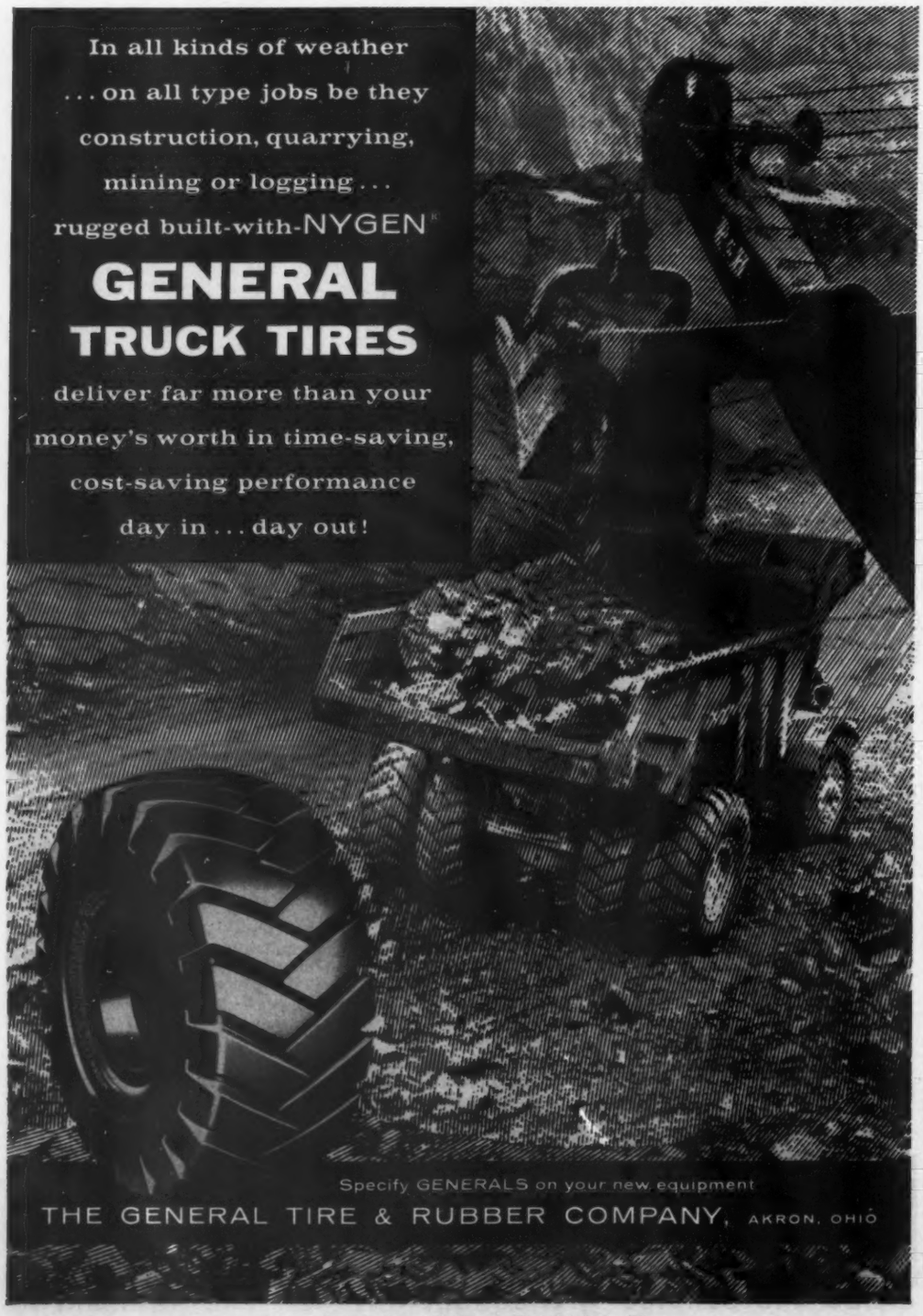
Batch plants

The two separate batching facilities—one for each paving spread—are located at about the mid-point of the project. From this location, batch trucks haul the dry concrete mix to the spread paving the 24-foot width of roadway and to the spread placing the inside 12-foot lane for each 36-foot roadway.

Groves is using two Blaw-Knox aggregate bins and two Blaw-Knox 400-barrel cement silos to charge the 17 White batch trucks. The aggregate bins are located at different areas within the plant site; cement-batching silos are next to each other so that batch trucks hauling to the 12-foot and 24-foot spreads are kept apart. This also provides ample room for separate stockpiles.

The aggregate bin of the plant supplying the 24-foot paving spread consists of 3 compartments that are charged by a Barber-Greene conveyor having a 30-inch belt. This conveyor transfers aggregates from a hopper, surrounded by the stockpiles, to the bin compartments. A 3-way chute atop the bin feeds the compartments. Sand is loaded in the middle 20-yard compartment, the No. 3 stone in an outside 25-yard compartment, and the mix of No. 1 and No. 2 stone in the other 25-yard compartment. Groves has to maintain two piles of sand, two of No. 3 stone, and one pile for the No. 1 and No. 2 stone.

Sand, when delivered, is dumped into one pile and cannot be used for at least 12 hours. The contractor generally uses a Caterpillar D8 tractor-dozer to shape and maintain the sand and the No. 1 and No. 2 stone piles for both aggregate-bin stockpiles. A LeTourneau-Westinghouse Tourna-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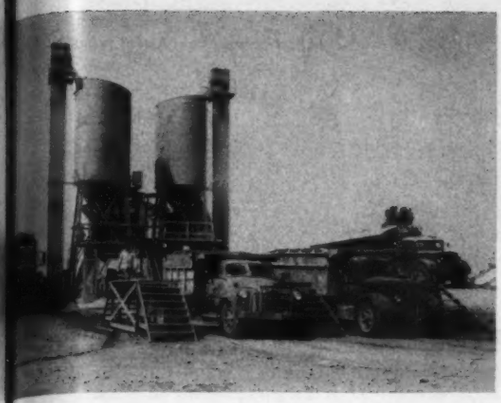
THE GENERAL TIRE & RUBBER COMPANY, AKRON, OHIO

For more facts, use Request Card at page 18 and circle No. 313



The cement silos for each spread, located next to each other, are Blaw-Knox 400-barrel units. Trailmobile cement tankers are dumping into hoppers that lead to the screw conveyors feeding enclosed bucket elevators.

The first Koehring 34-E in the 2-paver spread for the 24-foot-wide slab dumps in front of a Blaw-Knox spreader. That spreader trims the mix to a 4½-inch depth for the reinforcing.

dozer shapes the No. 3 stone stockpiles.

A Hough Payloader is used to charge the conveyor hopper of the big aggregate bin and, whenever the tractor is down, a second Hough front-end loader is used to shape the stockpiles and load the hopper.

The 4-compartment bin of the setup supplying the 12-foot paving spread is charged by a Northwest 6 crane, equipped with a 2½-yard bucket, that works the surrounding stockpiles. There are two compartments for No. 3 stone, one for sand, and one for the No. 1 and No. 2 stone mix. Aggregates for both plants are weighed and released manually.

During the best 9-hour workday, an average of 103 batches an hour was turned out by the big plant. An average of 580 batches per 9-hour day was produced by the second plant. This production manages to cut the average loading time for each batch truck to about 2 minutes. A total of 1,590 pounds of sand, 1,621 pounds of No. 3 stone, and 1,495 pounds of No. 1 and No. 2 stone, measured at 6 per cent moisture, is loaded per batch at the aggregate bins. An additional 846 pounds of cement is added per batch at the cement loading silos.

Cement handling

The cement silos are equipped with bell signals that automatically sound when 350 barrels of cement are loaded. This makes it possible for hopper and screw conveyor to be cleaned out after the cement tanker

(*Continued on next page*)

The Blaw-Knox 4-compartment aggregate bin used to supply the paving spread on the 12-foot-wide slab is charged by a crane with 2½-yard bucket. The 17 White 3 and 5-batch trucks in the hauling fleet were divided between the two spreads during the paving operations.

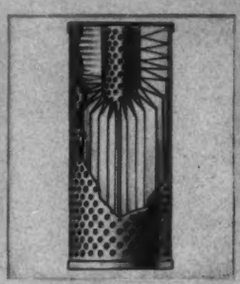
For more facts, circle No. 314→

SPECIAL REPORT TO CATERPILLAR OWNERS:

CAT CATERPILLAR

Parts you can trust
Dependable round-the-clock service

CUT MAINTENANCE COSTS...EXTEND EQUIPMENT LIFE BY CHANGING OIL AND FILTERS AS RECOMMENDED



How often should lube oil and filters be changed? The answer is obvious—when the lube oil and filter can no longer do their jobs. But how do you know when that time comes? Can you afford to guess?

Guessing can be costly. The cost of oil changed *more frequently* than necessary adds up to big sums during a work season. *Delayed* oil changes can bring about premature overhauls with more parts replacement costs.

Manufacturer recommendations are based on sound principles. Rapid advancements have been made in perfecting "additive" lube oils that can reduce wear. The familiar ridge left in liners by the piston rings can be practically eliminated by the use of Series III Oils and proper maintenance practices! These oils also allow longer periods between changes.

Full benefit and savings from new oils cannot be had without proper filtering. Caterpillar Engines have an emergency by-pass valve that opens and allows unfiltered oil to circulate if the elements become clogged. And elements become clogged when their dirt-holding capacity is reached. Caterpillar elements have ample dirt-holding capacity to keep the by-pass *closed* over the recommended period.

But aren't the dirt-holding capacities of all makes of filters about the same? To protect the long life reputation of Cat Diesel Engines, Caterpillar continually tests all brands of elements offered for Cat Engines. Below are the *surprising* results, based on tests of filters purchased on the open market during 1957 and 1958. During these tests commercial test dust was gradually added to clean oil until each filter clogged and the emergency by-pass valve opened. The amount of dirt added is recorded in the "Sediment Index" column.

HOW CAT FILTERS COMPARE WITH OTHER BRANDS

Brand	Filtering Area (Square Inches)	Sediment Index (In Grams)	Comparison
CATERPILLAR	1450	75	Used as basis for recommended oil and element change periods.
BRAND A	1450	13	Cat element lasted nearly 6 times longer.
BRAND B	1170	22	Cat element lasted 3 times longer.
BRAND C	1000	34	Cat element lasted more than twice as long.
BRAND D	Not measurable	No oil flow	Opens by-pass immediately even when new.
BRAND E	1460	26	Cat element lasted nearly 3 times longer.

SERVICE TIP: Get your copy of "Crankcase Lubricating Oil Change Recommendations," Form 32421-1W, from your Caterpillar Dealer right away. Keep pace with the new lube oil developments.

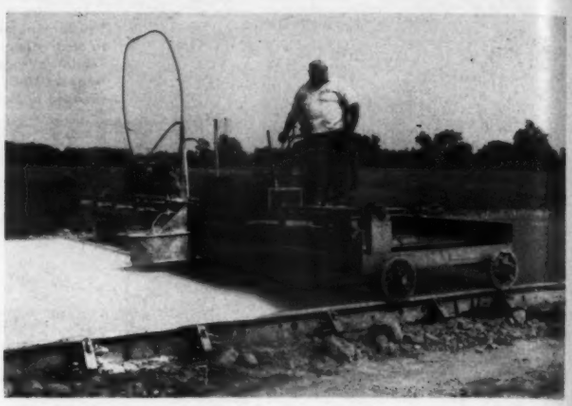
Your Caterpillar Dealer has the complete story on the advantages of changing lube oil and filters as recommended. Ask him to figure your annual engine oil costs for you, and see how much you can save. See him today!

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR

(Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

The second Koehring 34-E feeds the Jaeger spreader that strikes off the mix to a 9-inch depth. One paver was used in the spread paving the 12-foot-wide slab.



After finishing is completed for the 24-foot-wide pavement, a Heltzel spray machine applies white-pigmented curing compound to the surface to prevent water evaporation. The operator's nickname? Yup, it's Tiny.

(Continued from preceding page)

pulls away. This cleaning of the screw conveyor and hopper prevents any sticking when a new load is delivered, or prevents trouble if water should get into the screw.

The White batch trucks, with a 3 or 5-batch capacity, are divided between the two paving spreads. This, plus the fact that the plant is divided for each spread, makes the hauling a smooth operation.

Paving spreads

Groves first began paving one of the 24-foot widths with a 2-paver spread consisting of Koehring 34-E's in front of Blaw-Knox and Jaeger spreaders. Enough concrete was dumped in front of the first spreader so that the mix could be trimmed to a 4½-inch thickness. Welded wire reinforcing was set at this level, and the second paver placed additional concrete which was trimmed to the desired 9-inch thickness by the Jaeger spreader.

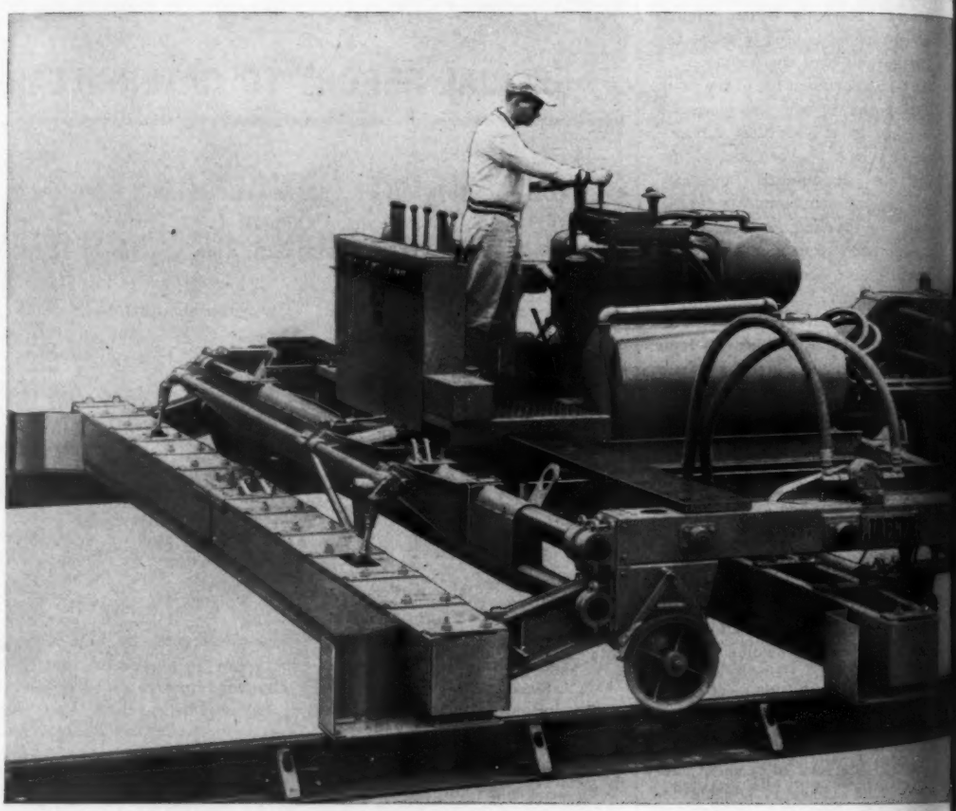
The last spreader was closely followed by a Heltzel Flex-Plane float-finisher, which combines the transverse finishing and floating of the slab surface. This one-man-operated machine eliminated the need for two individual transverse finishing machines and a floating machine. In doing this, it also eliminated the need for two operators. The contractor was able to work the hand-finishing and straightedge crew immediately behind the float-finisher and simplify the job of smoothing the slab surface.

Third spreader

Groves is using a third Koehring 34-E paver, leading a Blaw-Knox spreader and a Heltzel Flex-Plane float-finisher, to pave the 12-foot lane of each roadway.

Each spread has a Heltzel machine to spray the white-pigmented curing compound across the slab. The contractor has over 16,000 linear feet of Blaw-Knox 9-inch steel forms on the job. A minimum of 2,000 feet of forms is always kept set ahead of the paving spreads.

Form stakes are driven by a Chicago Pneumatic air hammer, powered by a Le Roi Tractair air compressor, so that form sections can be set in



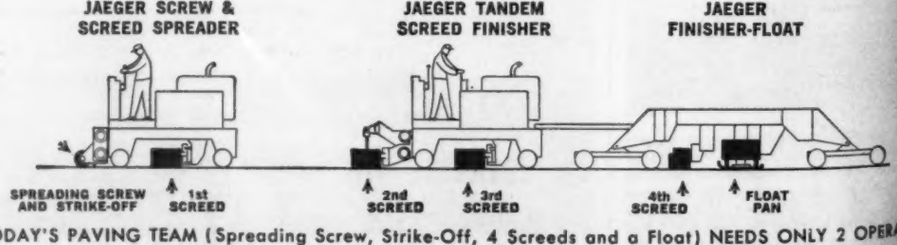
JAEGER FINISHER-FLOAT gives the final machine finish without added labor

(Towed and operated from any finishing machine)

This is the machine you've always wanted to complete the job behind your finisher.

Gives 4-to-1 Correction: It has a narrow-bottom, short-stroke screed and a wide float pan. Both are suspended between bogie axles giving a 4-to-1 ratio of correction (a 1/8" irregularity in the forms is reduced to 1/32" in the pavement).

Independent of Forms: The screed has hinged spring-loaded end shoes so that it and the float are both independent of adjacent form level. The smoothed



TODAY'S PAVING TEAM (Spreading Screw, Strike-Off, 4 Screeds and a Float) NEEDS ONLY 2 OPERATORS

the manually prepared form trench. A Caterpillar No 12 motor grader was used to shape the subgrade, which was rolled by a Galion 10-ton tandem before forms were set.

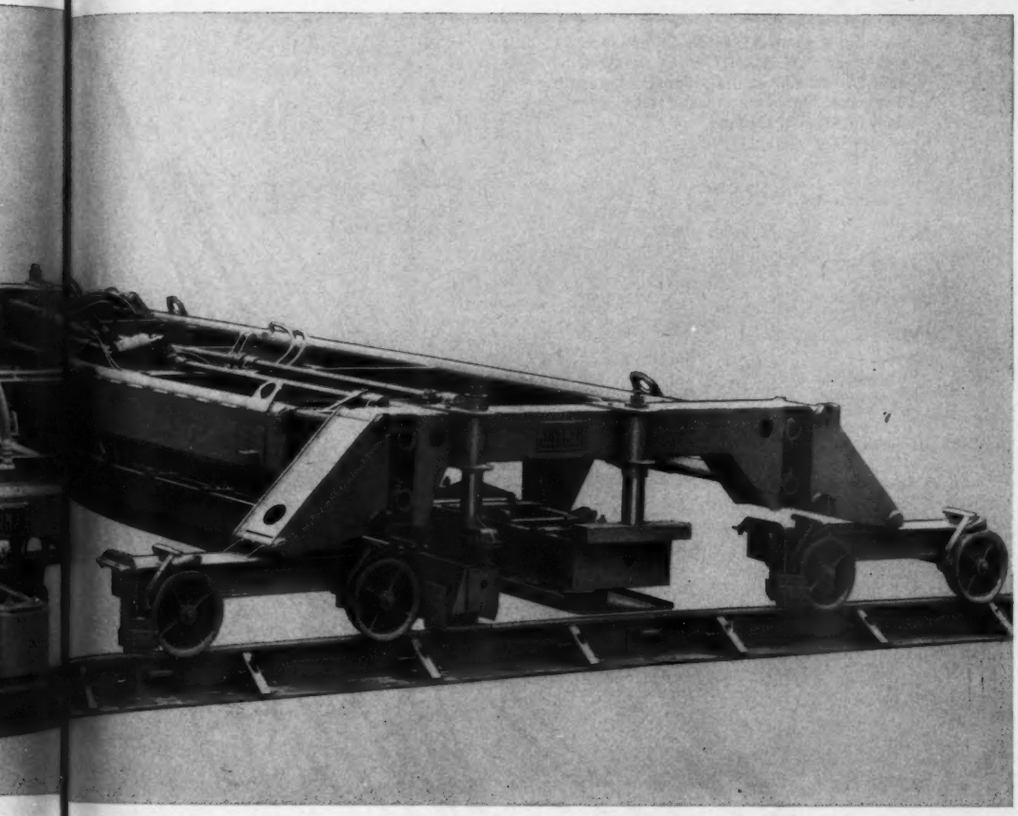
With forms in place, a Blaw-Knox subgrader is used to trim the grade between the forms. The grade is then compacted by a Buffalo-Springfield 10-ton tandem roller and checked by a Cleveland scratch board.

Using these mechanized spreads, Groves hit its best production on the 24-foot-wide slab: 2,080 linear feet during a 10-hour workday. The spraying of the concrete slab, the sawing of the joints, and the stripping of forms was sublet by Groves.

E. Miller Smith is the project superintendent; Paul Walrod, the paving superintendent; Martin Tirinato, the paving foreman; and Edward Nason, the plant foreman for S. J. Groves & Sons. Earle Towson is the district engineer in charge of the Empire Stateway projects for the New York Department of Public Works.

THE END

A Heltzel Flex-Plane float-finisher, combining transverse finishing and floating operations, keeps up with the 2-paver setup. A similar rig was used by the smaller spread.



cified on Interstate and State highways and U. S. ngineers airport work is easily achieved. The floated rface is usually ready for burlap and cure.

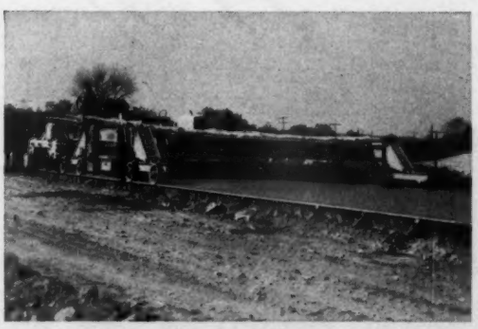
Kiss Finish" of the 6" bottom, 4" stroke screed elimates high and low spots ahead of the float without ringing up grout or disturbing large aggregate at the rface. Three screed speeds are available at the touch f a lever.

Quick crown change screed, raised or flattened by rning one ratchet lever, is standard. You have your hoice of parabolic or gable crown type.

o Separate Operator Needed: The machine is owed by any finishing machine, and controlled by the nishing machine operator. Screed drive, and screed nd float lift, are hydraulically powered by an air-cooled ngine and hydraulic system which are mounted on the eck of the finisher. Quick disconnecting, self-sealing ydraulic couplings, and single tow-pin, permit detachng machine in 2 minutes for moving or operating the nisher independently — a big advantage.

0' to 26' Quick Width Adjustability is provided by lescopic frame and screed and float extensions.

or Full Information see your Jaeger distributor or ck us for Catalog FF-9 giving detailed specifications n this modern cost-saving paving tool.



THE FINAL KISS TO A PERFECT PAVEMENT: 30" wide float pan, immediately behind suspended oscillating screed, completes the smoothest finish obtainable by precision paving methods. All corrections are first made by the screed. The kiss of the float pan, to the accurately metered surface, gives the perfect finishing touch to the slab.

THE JAEGER MACHINE COMPANY

701 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario

ALL-HYDRAULIC FINISHERS • CONCRETE SCREW & SCREED SPREADERS
AGGREGATE SPREADERS • COMPRESSORS • PUMPS • MIXERS • TRUCK MIXERS

For more facts, use Request Card at page 18 and circle No. 315

Case history

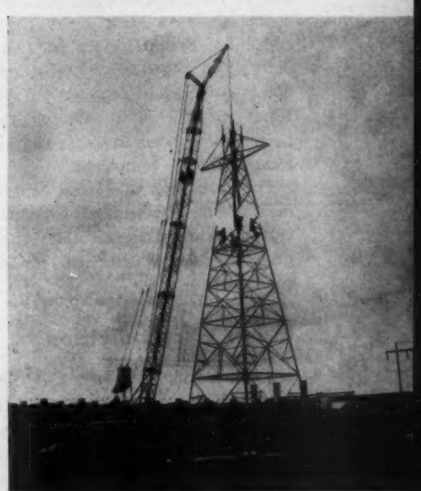
Giant truck crane speeds high-line tower erection

Stringing high-line towers across the Texas Panhandle, the Cox & Son Electric Co., of Borger, Texas, is working at close to a tower-a-day pace. Twenty-two 114-foot towers for the South West Public Service Co. went up in 26 working days, despite 22-mph winds. Crews have built a tower in as little as 4 hours; once they built two in 13½ hours.

"Credit for the fast erection goes to three things," says G. L. Brown, job superintendent: "Our skilled workmen, the simple bolt-together tower design, and the Michigan Model T-24 mobile long-boomed truck crane."

The tower is put up in sections, each weighing as much as 4 tons. The Michigan unit raises and holds each section as workmen make the connections. Power up and power down on both the load line and boom make precision spotting easy. The crane has a 100-foot boom with a 20-foot jib, giving it sufficient reach to top out the tower.

For further information write to the Clark Equipment Co., Dept. C&E, P. O. Box 599, Pipestone Road, Benton Harbor, Mich., or use the Request Card at page 18. Circle No. 151.



A Michigan Model T-24 truck crane raises, then holds, each section of the tower as workmen make the connections.

Loaded with 18 to 22 yards of rock, gravel, and clay, three of these Athey PR21 rear-dump trailer units make 33 round-trip 800-foot hauls per day.

Case history

Production is increased with rear-dump trailers

"More haul per shift" is the reported keynote of operation at the Thomaston flood-control dam in Connecticut where Oneglia & Gervasini, contractors, depend on three Athey PR21 rear-dump trailer units to make 33 round-trip 800-foot hauls per day, loaded with 18 to 22 cubic yards of rock, gravel, and clay.

The Athey equipment, teamed with Caterpillar tractors, can spin around in a 33½-foot circle, body down, which means no maneuvering to back into position. The Athey wagon comes straight on in to the shovel, whips around to provide a broad-back target, and then pulls away at full speed, taking such obstacles as 14 per cent grades in easy stride.

For further information write to the Athey Products Corp., Dept. C&E, 5631 W. 65th St., Chicago 38, Ill., or use the Request Card at page 18. Circle No. 34.

GE combines departments; names sales manager

The General Electric Co. is combining its Communication Products Department with its Technical Products Department. Harrison Van Aken, general manager of the Communication Products Department, will head the combined organization with headquarters in Lynchburg, Va. The Communication Products Department makes two-way communication systems; the Technical Products Department engineers advanced military communication equipment.

The company's Computer Department in Phoenix, Ariz., has appointed Guy E. Warner, former sales engineer, to sales manager of process computers.

Heads Talcott division

James Talcott, Inc., New York City, has appointed Harvey M. Kelsey, Jr., to head its new Industrial Time Sales Division. Kelsey, who joined the firm ten years ago, became a vice president in 1956, a director the following year, and treasurer in 1958 for the commercial financing and factoring organization.

Case history

Electric heat curing ups precast production

By using gas infrared heat to cure molded concrete products, Fifer Industries, Inc., Louisville, Ky., reportedly has doubled its capacity. Forms for a variety of items may now be used at least twice a day

After forms are poured, one or more Perfection portable propane-fired infrared generators are moved into place for curing, and adjusted to radiate over the entire top surface of the forms. Forms are removed after 1½ hours of infrared curing. The concrete is wet down several times a day after removal from the forms to achieve uniform curing.

Fifer prefers portable propane-fired units because of their adaptability, although line gas is available. A 100-pound cylinder of propane, which costs Fifer about $8, operates one of the heaters for 70 hours. Each heater produces 12,000 Btu per hour.

For further information write to Perfection Industries, division of Hupp Corp., Dept. C&E, 1135 Ivanhoe Road, Cleveland 10, Ohio, or use the card at page 18. Circle No. 164.

Superior Rigging & Erecting Company, uses two 35-ton P&H 555A-TC truck cranes to install 76 ton kiln at the Atlanta Aggregate Company plant of the Vulcans Material Company in Atlanta, Georgia.

...forms are poured, one ...re Perfection portable ...-fired infrared gener- ...are moved into place ...djusted to radiate over ...ire top surface of the ...

Case history

More than 600 pours with one set of forms

"Over 600 pours on one set of concrete forms and still going strong"—this is the report of the S & I Construction Co., of Crystal Lake, Ill., regarding its GPX-overlaid plywood concrete forms. Constructed by the Symons Clamp & Mfg. Co., the forms are covered with Georgia-Pacific GPX 60/60 CCF in ½-inch thickness.

S & I has been using these forms for several years and reports that many of the sheets are yet to be turned over. The company states that the forms still perform well, with the resulting concrete being smooth and grain-free. They say that even after such prolonged use, the forms still strip and clean up almost like new.

The S & I Construction Co., of Crystal Lake, Ill., reports a substantial saving in money through multiple re-use of forms covered with GPX concrete-form plywood.

For further information on GPX concrete-form plywood, write to the Georgia-Pacific Corp., Dept. 13A, Dept. C&E, Equitable Bldg., Portland 4, Ore., or use the Request Card at page 18. Circle No. 160.

Case history

Claim downtime slashed with big dredging bucket

Rocklike hardpan—600 cubic yards every 24 hours—is being dredged from Lake Huron's western shore by the Roen Steamship Co., Harrisville, Mich., through the use of a Blaw-Knox Model 0755-RN 5½-cubic-yard clamshell.

According to Ray Pesch, project engineer for Roen, "In spite of this rugged duty, the bucket requires only normal maintenance. The only downtime involves a 10-minute lubricating period every eight hours and replacement of 7 chrome-nickel alloy digging teeth once each week when the bucket is inspected."

Removal of 160,000 cubic yards was specified in the $1,400,000 contract for Harrisville's Harbor of Refuge.

For further information write to the Blaw-Knox Co., Dept. C&E, 300 Sixth Ave., Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 24.

←For more facts, circle No. 316

One P&H always sells another because

P&H "PROFIT·LIFTS" spot giant loads accurately...safely

When you estimate a rigging job today, the man with the best equipment and know-how usually gets the job. Then he depends on his men and machines to bring the job in at a profit.

That's where P&H truck cranes come in. You can count on *extra* "profit-lifts" every day.

Lifting at a profit is characteristic of P&H truck cranes. There are plenty of reasons for it, and they are all performance. It's the result of P&H planetary hoist that raises and lowers the boom under power for positive, "inching" control; it's the P&H live roller circle with adjustable hook rollers for smooth, steady swings with no tipping action; it's P&H designed features like one-piece, weave-proof frame and scientific weight distribution of the upper for utmost stability.

And—when the going gets extra rough—it's that day-in, day-out production without a hitch that comes from conservative P&H ratings and *extra* reserve power and strength.

This is what produces those "P&H Profit-Lifts." It's also the reason the number of P&H owners has increased 40% in the last 4 years.

With P&H, you get some of tomorrow's work done today. That's why leading contractors say, ". . . it's no wonder one P&H sells another."

P&H

EXCAVATORS
½ • ¾ • 1 • 1½ • 1¾ • 2½ • 3 • 3½ yards

and CRANES
10 • 12½ • 15 • 20 • 25 • 30 • 35 • 40 • 50 • 60 • 80-ton

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Construction & Mining Division
Milwaukee 46, Wisconsin

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GRAVES EQUIPMENT CO. Northampton, Massachusetts
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EDDY & COMPANY Lansing 4, Mich.
HUEBNER MACHINERY & SUPPLY CO. Saginaw, Michigan
P. H. MACHINERY, INC. Duluth 8, Minn.
H. C. ORMES CONST. EQUIP. CO. Minneapolis 14, Minnesota
ALLIED EQUIPMENT, INC. Jackson, Mississippi
MISSOURI-ILLINOIS TRACTOR & EQUIP. CO. Robertson, Missouri
SEITZ MACHINERY CO., INC. Billings, Montana
TREASURE STATE EQUIPMENT CO. Kalispell, Montana
HIGHWAY EQUIP. & SUPPLY CO. Lincoln, Nebraska
A-D MACHINERY CO., INC. Elko, Nevada
NOBLE-BELISLE MACHINERY, INC. West Lebanon, New Hampshire
JOHNSON & DEALAMAN, INC. Newark 5, New Jersey
CONTRACTORS EQUIP. & SUP. CO. Albuquerque, New Mexico
CONTRACTORS' SALES CO., INC. Albany 4, New York
MUNICIPAL MACHINERY CO., INC. Coram, New York (Long Island)
CONSTRUCTION EQUIPMENT CORP. Long Island City 1, New York
RALPH C. HERMAN COMPANY Marlboro, New York
P-D SERVICE, INC. Pavilion, N. Y.
CREDLE EQUIP. POTSDAM CORP. Potsdam, New York
CREDLE EQUIPMENT, INC. Utica, N. Y.
BUCK EQUIPMENT COMPANY Statesville, N. C.
GENERAL DIESEL & EQUIP. CO., INC. Fargo, North Dakota
BOARDMAN MACHINERY COMPANY Oklahoma City 7, Oklahoma
LOGGERS & CONTRACTORS MACHINERY CO. Portland 14, Ore.
STEPHENSON EQUIPMENT, INC. Harrisburg, Pennsylvania
A. T. GREEN MACHINERY COMPANY Pittsburgh 22, Pennsylvania
C. C. & F. F. KEESLER Prospect Park, Pennsylvania
ROADBUILDERS' EQUIPMENT, INC. Columbia, South Carolina
PECAUT EQUIPMENT COMPANY Sioux Falls, South Dakota
OSBORNE EQUIPMENT COMPANY Knoxville, Tennessee
SOUTHLAND TRACTORS, INC. Memphis, Tennessee
REYNOLDS COMPANY Nashville, Tennessee
PLAINS MACHINERY COMPANY Amarillo, Texas
CENTRAL TEXAS EQUIPMENT CO. Austin, Texas
CORPUS EQUIP. & SUPPLY CO., INC. Corpus Christi, Texas
LUMBY MACHINERY COMPANY Dallas, Texas
R. B. EVERETT & COMPANY Houston 1, Texas
CATS-CARBON EQUIPMENT CO. Price, Utah
CATE EQUIPMENT COMPANY Salt Lake City 1, Utah
AIR MAC, INC., OF WASHINGTON Seattle 4, Washington
CARRINGTON COMPANY Seattle 4, Washington
RISH EQUIPMENT COMPANY Bluefield, West Virginia
DROTT TRACTOR COMPANY, INC. Milwaukee 3, Wisconsin
WILSON EQUIPMENT & SUPPLY CO. Cheyenne, Wyoming
HONOLULU IRON WORKS CO. Honolulu, T.H.

Surveying Washington

by E. E. HALMOS, JR.

Senate labor bill affects construction industry

Bill S 1555 that the Senate passed after a bitter touch-and-go floor battle in late April has direct significance to the industry. It specifically legalizes prehire agreements in the construction field, and makes some attempt to end the "no-man's-land" area where the NLRB will not take jurisdiction and the state courts cannot.

It is expected that the bill's provisions will be made stiffer by the House. The House, which comes up for election every two years, is politically more jittery than the Senate, since it is elected by districts and areas, not whole states. This is to say that House members can be affected more directly by concentrated political activity.

As a whole, the Senate bill is not nearly as bad—or nearly as good—as its opponents or proponents claim. A careful analysis of its provisions shows that it makes a reasonable approach to guaranteeing the rights of individual union members; prescribes that state agencies may, if they agree to follow federal law, take over when NLRB will not; forces union officers to take fiduciary responsibility for union funds they handle; hits at secondary boycott abuses; and tightens up the requirements for reporting on union-management welfare funds.

On the weak side, the bill leaves a few sizable loopholes for some abuses, and makes it possible for unions to continue to conceal their membership lists, even from their own members.

Probably the biggest shock for the unions is the size and severity of penalties for noncompliance, and the very definite insertion of the U. S. district courts as arbiter of union affairs covered by the measure. There is no money penalty less than $10,000, and possible jail terms range from 1 to 20 years. The bill would empower Secretary of Labor Mitchell to investigate, require production of records, and file charges.

For all concerned, the Senate bill would build up a tremendous increase in paper work. Both union officials and employers would be required to report, individually, on dealings between them, except where the official is a bona fide employee; and unions would be required to do the mailing, at the candidate's expense, for election candidates and to produce records on demand.

Two Great Lakes developments bring added construction

The opening of the St. Lawrence Seaway has brought an immediate demand for $29 million to help the U. S. Army Corps of Engineers improve channels in the western end of Lake Erie, so that ports there will be accessible to deep-water shipping.

The Senate approved a Great Lakes Compact that will set up a commission, which could include Canadian provinces, to coordinate construction work on the lakes, and promote joint efforts to improve water supply, pollution control, and the like.

Legislation to be decided on many appropriations

Late June and July will be the months of decision on major legislation affecting construction.

On the agenda are hearings, that started in early May, on the Highway Trust Fund; appropriations, still in House committees, for Army Civil Works and the Bureau of Reclamation; multibillion housing, airport and urban renewal programs, also still in committees; and the new Senate labor bill, which has a long way to go before it gets to the House floor, let alone to the inevitable conference committee.

There is about $7 billion of direct

PECCO-BEAM

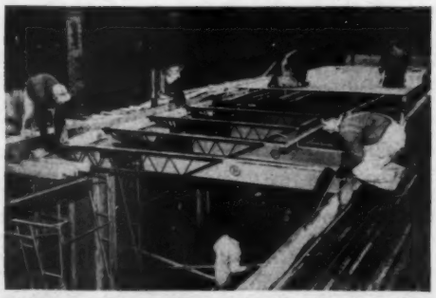
Horizontal Shoring

The light-weight, all-steel Pecco Horizontal Shoring Beam is one of the outstanding developments in the construction industry today . . . It represents the simplest and most economical building tool thus far designed for supporting formwork for reinforced concrete slab construction . . . By eliminating the costly forest of vertical shores, Pecco beams will reduce forming costs by 40% or more, a claim proven on many jobs from coast to coast.

APPROVED
New York State B.S.A.
NO. 4297

PECCO
HORIZONTAL SHORING

- **Top quality workmanship,** advanced design and high-grade steel combine to give Pecco high bending moment of 12,000 ft. lbs., maximum end reaction of 3,600 lbs., and safety factor of 2.2 : 1.
- **Assembles quickly** to any span due to telescopic principle and simple "wedge lock" locking device.
- **Adjusts** with only 3 standard sections, shown above, to wide range of spans from 8'6" to 27'7"
- **Handles easily** and quickly due to light weight of only 8 lbs./ft.
- **Offers free work areas** below the formed slab enabling other trades to start their work immediately after erection of the formwork.



Carpenters place a Pecco L8 P8 combination, with 14'-4" span, in position on a high school job in Philadelphia for McCloskey & Co.

36-17

Pecco-Beams are available for sale or rent on a nationwide basis through franchised distributors. For the name of your local distributor, quotations, and engineering service, please contact:

AMERICAN-PECCO
CORPORATION

Federal Savings Bldg., White Plains, N. Y. WHite Plains 8-2555

For more facts, use Request Card at page 18 and circle No. 317

construction money tied up in some of this legislation and other smaller matters—the appropriation bill for the Department of Health, Education and Welfare, for instance, includes some $233 million for buildings, sites, and construction work. Much of the progress of the industry rides on the labor legislation.

Contractors may find income in projects here, abroad

The Senate Public Works Committee has ordered the U. S. Army Corps of Engineers, through its Rivers and Harbors Board, to begin preliminary investigation on the long planned $900 million to $1.5 billion development of the Yukon River basin in Alaska. The biggest single piece of the job will be a dam in Rampart Canyon, about 90 miles northwest of Fairbanks, to back up a 1.5-billion-cubic-foot lake, covering 10,000 square miles, to produce about 5 million kw.

A bill, HR 181, aimed at benefitting the fishing industry, provides loans for construction of fishing boats and equipment. It also provides loans, through the Secretary of the Interior, to finance construction, repair, and modernization of fish-processing plants. A $6 million fund is provided as the initial capital for such loans.

Don't overlook the Organization of American States as a source of new construction money for overseas work. A recent announcement states that OAS will form a new international bank, backed by 21 Latin American countries and the United States, with a $1 billion capitalization. The bank will use its funds to finance development of the member countries, and this includes construction work.

TVA is planning to spend $100 million for construction and machinery for power facilities this year. All of the money is to come out of the agency's power revenues. In new appropriations, only $15 million is being asked, for a new lock at Wilson Dam.

Government steps up program to recruit engineers

The U. S. government, the biggest employer of engineers, has just concluded an all-agency conference on the "care and feeding" of such employees.

Moves to increase the attractiveness of government work have included higher entering grades (more pay) for young men coming into government, payment of expenses of moving to the first post of duty, and other liberalizations.

There will not be much more on pay, however. Acceptance rates are too good, since more engineers are looking for government work. But watch for increased recruiting at junior-senior college levels and more offers of summer jobs to indoctrinate the younger men.

Legislation for spending more highway money

Although the central question of what to do about refilling the coffers of the Highway Trust Fund has not been tackled yet, congressmen are introducing other legislation that calls for spending more highway money. One of the proposals—a repeater for the past two sessions—would set aside $4.3 billion over the next 17 years to reimburse states for toll and free roads built or under contract before June, 1957.

Note the "free" roads inclusion. This is a gimmick to get support from western and midwestern states which, with virtually no toll roads, have not been able to work up much interest in the proposals. Western states would get about $530 million out of the funds, but New York State would get $799.1 million for its 540-mile Thruway. Repayments would be used for highways.

House committees took up these proposals in May, but chances of passage are considered slim.

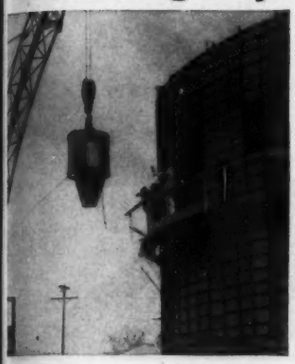
Proposal to limit sizes of planes, runways

A limit on airplane sizes and landing speeds to cut the length of required runways may be the answer to the growing problem of airport obsolescence.

A Federal Aviation Authority official recently told airport operators that FAA may refuse to certify aircraft of such gross weights as to require runway lengths of more than 10,500 feet. "We must stop this nonsense of more and more concrete," said Brig. Gen. Marcus Cooper, assistant administrator of FAA's Office of Plans and Requirements. He blamed aircraft manufacturers for not considering airport problems, and commented that government was also to blame for certifying aircraft weights that cannot be handled by existing runways.

Aircraft manufacturers reacted quickly, calling any such refusal to certify new planes a block to progress, and pointing to increasing passenger business, which jumped from 1.6 million passengers a year in 1935 to 45 million this year.

16 Working Days

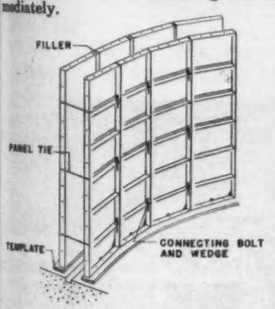


Experienced Men and Symons Forms

...Pour Sewage Treatment Plant in Record Time

One of the speediest sewage treatment plant projects ever undertaken in the Southwest was completed in 16 working days near Phoenix, Arizona. Capacity of plant is rated at 5 mgd. It has a 700,000 gallon digester.

F. H. Antrim Construction Company used 15,500 square feet of Symons Steel-Ply panels. An important factor in selecting Symons Forms was that they could be erected on one side of the circular tanks without installing ties immediately.



Forms were contracted for on a rental basis with an option to purchase. Later, Antrim decided that the forms were so well adapted to his work that he purchased 14,000 square feet of the panels.

Folder giving the complete Antrim story sent FREE upon request.

Symons

SYMONS CLAMP & MFG. CO.
4251 Diversey Ave., Dept. F-9, Chicago 39, Ill.

MORE SAVINGS FROM SYMONS

For more facts, circle No. 318

PROVIDE WATERTIGHT JOINTS IN CONCRETE CONSTRUCTION WITH...

SEALTIGHT® PVC WATERSTOPS

POLYVINYLCHLORIDE

SPECIFICATIONS

Specific Gravity ..... 1.28 Max.
Durometer Hardness ..... 80 ± 3
Tensile Strength....2600 PSI Min.
Elongation ..... 350% Min.
Temperature Range ..... from +176°F - —50°F
Cold Brittleness Test ..... —50°F ASTM D746 —55T
Chemically resistant to chlorinated water, salt water, acids, alkalis, sewage wastes, oil, etc.

SEALTIGHT PVC Waterstops are extruded from a special PVC compound with added plasticizer and stabilizer to provide all of the necessary qualifications of a true waterstop. The exclusive cross-section design features a unique rib that has a vertical surface on the leading edge and a diagonal surface on the trailing edge to provide a tenacious grip to the concrete in which the waterstop is embedded . . . the special center bulb provides the ability for the waterstop to successfully handle tremendous pressures caused by concrete movements. SEALTIGHT PVC Waterstops are strong and flexible . . . on-the-job splicing may be accomplished quick and easy without special equipment. Ideal for installation in concrete structures of all types. SEALTIGHT PVC Waterstops offer the construction industry the top-quality product in its field at a competitive price . . . specify SEALTIGHT PVC Waterstops when you want a 100% watertight joint.

OTHER SEALTIGHT PRODUCTS

- "PREMOULDED MEMBRANE" . . . the industry's only TRUE VAPOR SEAL.
- "CORKTITE" Impermeable Perimeter Insulation.
- "HYDROMAT" Asphalt Liners.
- Expansion Joints of all types.
- Joint Sealing Compounds.
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- Air Entraining Agents.
- Concrete Curing Compounds.

W. R. MEADOWS, INC.
13 KIMBALL ST. • ELGIN, ILLINOIS

For more facts, use Request Card at page 15 and circle No. 319

Can you see where you're DIGGING?

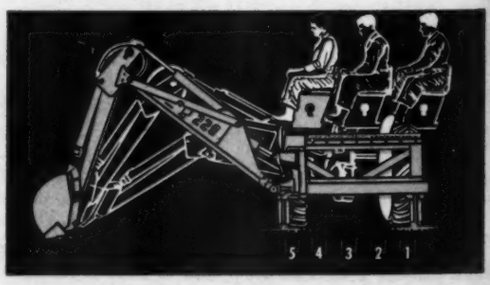
YOU CAN...with a DAVIS BACKHOE!

Massey-Ferguson's new Davis 220 Backhoe gives **exclusive "line-of-sight"** operation. In any digging position – flush left, flush right, in the center . . . even when dumping – the operator's seat is in line with the boom, the bucket is always in full view. You don't have to twist or stretch to see. The Davis 220 is designed to put you where you deserve to be – on top of your work and in line with it. You can do any digging job more accurately, faster, and with unsurpassed convenience and comfort.

Visibility is only one feature of the new Davis 220. Increased operating pressure to **2150 psi** with high-pressure fittings, tubing and hoses – **14,000 pounds breakout force** to dig through frozen ground and asphalt – **vertical stabilizers** for "mountain-goat" footing all add up to better performance. Of course Davis was the first backhoe to ever dig flush and to have a rotary cylinder giving 200° continuous operating arc.

NEW HYDRA-SLIDE POSITIONING with the *DAVIS 220*

The new Davis 220 features Hydra-Slide positioning to move the digging assembly (and the seat) to a flush digging position. It can be done in 5 minutes by simply loosening four bolts and sliding the mast assembly by actuating the boom and bucket cylinders. Total of 5 digging positions located along frame



No Wonder Davis Backhoes Are So Popular and So Profitable to Own.

See your dealer for an "on-the-job" demonstration, and ask him about the budget-priced Davis Model 185!

MASSEY-FERGUSON INDUSTRIAL DIVISION
1009 SOUTH WEST STREET • WICHITA 13N, KANSAS

For more facts, use Request Card at page 18 and circle No. 320

B-G division changes

James E. Gleason has been named assistant sales manager of the Conveyor Division of Barber-Greene Co., Aurora, Ill. In his newly created post, Gleason will be responsible for supervising all field sales operations. He will have headquarters in the home office.

Five sales section managers have been appointed in the company's Construction Equipment Division. John L. Root heads the ditcher section; Robert McClure, portable-conveyor and loader section; G. Richard Lundberg, spreading-equipment section; and Richard F. Jouannet, mixing-plant section. J. S. Drew heads the sales and technical-service training section. This section serves all of the division's sections, the three other divisions of Barber-Greene's domestic sales operations, and collaborates with the eight foreign sales subsidiaries.

Homelite erects plant

Construction has begun in Greer, S. C., for a new plant for Homelite, a division of Textron Inc., Port Chester, N. Y. Located on a 50-acre site, the square building, 360 feet long on each side, will enclose 143,000 square feet of floor area. The almost windowless plant will be constructed of brick, concrete, and steel, with long-span steel joists supporting the roof on columns spaced on 40-foot centers.

The company plans to move all production of gasoline-engine-driven pumps, generators, and blowers from Port Chester to the new plant, when it is completed next fall.

John Reed, former assistant to the vice president of manufacturing, has been named works manager of the Greer plant.

Case history: Cutting away the stainless welds that secure worn manganese wear plates on P&H crane pads is one of the many applications of the Arcair metal-removing torch. According to the Construction Supply Co., a heavy-equipment repair firm, of Celina, Ohio, the ability of Arcair torches to remove only the stainless weld metal prevents the need of cutting into the parent metal of the part being repaired as was the practice with former methods. The combination of an electric arc to melt and compressed air to remove the melted metal does the job more quickly and inexpensively, states that company. For further information write to **The Arcair Co.**, Dept. C&E, P. O. Box 431, Lancaster, Ohio, or use the Request Card at page 18. Circle No. 30.

For more facts, circle No. 321→

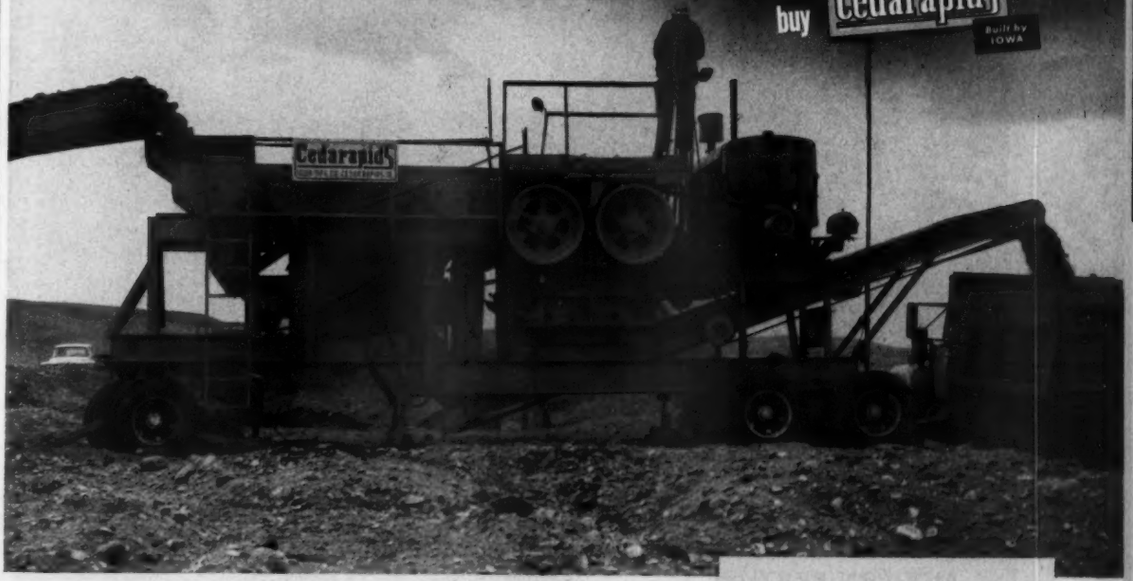
Case history: Automatic batching equipment was installed last year in the Hopedale, Mass., ready-mix concrete plant of the Rosenfeld Washed Sand & Gravel Co. According to that firm, the use of two Howe Batchmaster control systems resulted in a production increase of 25 per cent along with improved quality control. For further information about Batchmaster units, write to **The Howe Scale Co.**, Dept. C&E, 2951 Scale Ave., Rutland, Vt., or use the Request Card at page 18. Circle No. 80.

TWIN JAWS

CRUSH GRAVEL 40% FASTER*

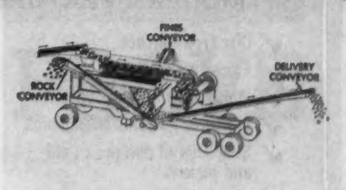
* Two movable jaws give you 40% to 100% higher crushing capacity than single jaw crushers of the same size!

Want lowest cost per ton? buy Cedarapids Built by IOWA



That's why Albert Lalonde Company, of Sidney, Montana, gets 400 tons per hour of 3" material from their Cedarapids Twin Jaw Intermediate plant. The exclusive Cedarapids 18" x 36" Twin Jaw Crusher in this unit combines overhead eccentric design with two movable, synchronized jaws operating at high speed to provide the high velocity jaw action that crushes tremendous hourly tonnages of even the hardest materials. Low maintenance, with jaw life five to eight times longer than single jaw crushers, also helps reduce per-ton costs.

With its high crushing capacity, a Cedarapids Twin Jaw Intermediate plant handles the full output of any Cedarapids Portable Primary in crushing rock, and is also widely used for primary crushing in gravel pits where there is a high percentage of oversize to be crushed.



Flow diagram shows how the Cedarapids Twin Jaw Intermediate plant can be set up to produce three sizes of finished product. The 24" x 22' fines conveyor scalps off all material passing through both decks of the 48"x10' horizontal vibrating screen. The 24" x 22' rock conveyor removes any desired specified size of material before it reaches the crusher.

IOWA MANUFACTURING COMPANY / Cedar Rapids, Iowa U.S.A.

SEND FOR THESE BULLETINS TODAY

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

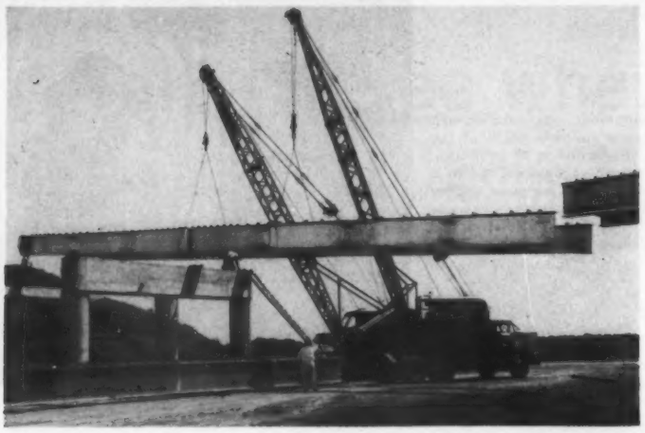
Gentlemen: Please send Bulletins Unit-4 and TJ-1 with details about Cedarapids Intermediate Crushing Plants and Twin Jaw Crushers.

Name _____ Title _____

Company _____

Address _____

City _____ State _____



Specifications required that the aluminum girder sections for the 220-foot highway bridge near Des Moines be lifted at two points. An American 399 crawler and a Lorain MC-414 combine to lift a 95-foot section to the pier tops.

Materials

ALUMINUM for a new bridge

Although motorists driving over a grade separation in Des Moines may not feel the difference, they are making use of the first aluminum-girder-type highway bridge in the world.

Well aware of the difference, however, is the Iowa State Highway Commission, which initiated the plan for the 220-foot bridge; the three leading aluminum companies that rolled out the big plates; Pullman-Standard Car Mfg. Co., which fabricated the girders; and Jensen Construction Co. —United Contractors, Des Moines, which built the bridge.

The marked difference between the properties of aluminum and steel had to be taken into account by Ned I. Ashton, consulting engineer, Iowa City, Iowa, who made the design and detail plans of the 4-span continuous structure.

Since aluminum expands about twice as much as steel for a given rise in temperature, thermal stresses within the reinforced-concrete deck had to be carefully figured and allowance made for them. With aluminum deflecting about three times more than steel under the same load, there was a problem in holding the live-load deflections of the girders to highway specifications.

Advantages of aluminum

But there were distinct advantages to designing in aluminum. The composite action of a concrete deck slab with an aluminum beam is more favorable than the action of concrete with steel. In other words, the concrete above the girder helps carry more of the load. Also, aluminum's great advantage in weight makes it possible to reduce the dead load of the superstructure.

During construction, the aluminum girders simplified erection procedures. Prefabricated in four large sections, the girder assemblies were quickly set in place and bolted together. Of particular importance, also, is the fact that the aluminum girders and handrails require no painting or maintenance work.

Research project

The idea of building a bridge with aluminum came as a result of the steel shortage several years ago, and was initiated by the Iowa State Highway Commission. It was later adopted as a research project by the Com-

Looking for a modern 2½ yd. shovel?

CHECK THESE MODERN FEATURES

- ✓ Disc type clutches
- ✓ Forced air cooling
- ✓ Multi-Stage Torque Converter
- ✓ Exclusive Powerflo slide pinion
- ✓ Simplicity of design . . . only 14 gears and pinions
- ✓ Simple jack adjustment of crawler treads
- ✓ Dependable air or manual controls
- ✓ Self-removing counterweight
- ✓ Convertible to crane, dragline and trench hoe

SEE THE NEW MANITOWOC MODEL 3100
1st IN PERFORMANCE
1st IN OUTPUT

Here is a new Manitowoc shovel in the 2½ yd. range that will outproduce and outperform anything in its class. Completely modern in design, the Model 3100 provides many exclusive, advanced features that contribute to more yardage per shift at lower net cost per yard.

Though it's a big machine, with all the big machine design and construction features, the Model 3100 handles, travels and can be moved from job to job with small machine ease. It's easy to make fast, short moves by truck because a minimum number of rugged, precisely machined fittings allow you to remove the counterweight, *complete* crawler assemblies and other components without time consuming advance preparation and effort . . . *and* the 3100's overall maximum outside width of only 11'1" (within ordinary RR shipping clearances) means you can run it aboard a standard flat car, as is, and you're ready to go!

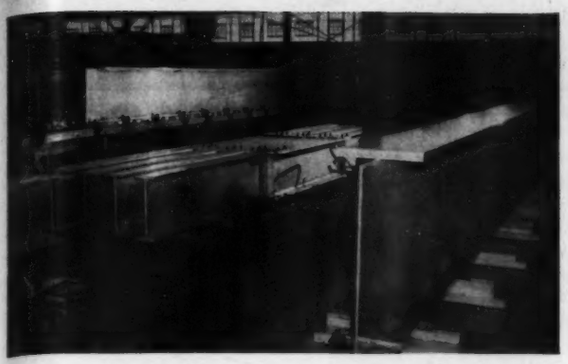
The Manitowoc 3100 is a big producer and big earner on any job—shovel, crane, back hoe, clam or dragline. Ask your Manitowoc distributor for additional details and specifications on the new Manitowoc Model 3100 . . . a really modern 2½ yard excavator.

Manitowoc

MANITOWOC ENGINEERING CORP.
(A subsidiary of The Manitowoc Company, Inc.)
MANITOWOC, WISCONSIN

CRANES	SHOVELS	DRAGLINES	TRENCH HOES
25 TON - 100 TON	⅜-YD. - 5½-YD.	1½-YD. - 6-YD.	1½-YD. - 3-YD.

For more facts, use Request Card at page 18 and circle No. 322



Fabrication of the aluminum girders was done at the Pullman-Standard Car Mfg. Co. plant in Chicago. Here a girder section for the bridge is ready for a flange splice and tack weld fit-up before automatic welding joins flange to web.

A 126-foot-long aluminum subassembly is ready for shipment to the job site for the 220-foot bridge across a 4-lane highway near Des Moines. This, the longest of the four 12-foot-wide subassemblies, weighs approximately 21,000 pounds.

mission's Research Board to explore the advantages of using aluminum in a bridge. Three leading aluminum producers helped sponsor the project: Aluminum Co. of America, Kaiser Aluminum & Chemical Corp., and Reynolds Metals Co.

The bridge, which carries 2-lane Clive Road over a new section of the interstate highway northwest of Des Moines, was built at a contract price of $124,682 by Jensen Construction Co.—United Contractors, Des Moines. The bridge contains 75,000 pounds of structural aluminum and 4,300 pounds of aluminum handrail.

Typical of many grade separations in the country, the bridge has a 30-foot-wide reinforced-concrete deck and 2-foot concrete walks. The four spans are 41.25 feet, 68.75 feet, 68.75 feet, and 41.25 feet.

The four lines of continuous-welded aluminum girders, which are on 9.5-foot centers, support an 8-inch concrete deck. To equalize deflections, the girders are connected with continuous transverse aluminum beam diaphragms. These are at the piers and abutments and at about 14-foot intervals along the length of the structure.

Fabrication

The fabrication of the aluminum plates into I-shaped girders, and the combining of the girders with the diaphragms to make four giant "boxes," was by far the most dif-

(Continued on next page)

In the Pullman-Standard plant, a workman drills bolt holes in the interior diaphragm flanges.

JOB RECORDS PROVE

Firestones lower tire costs-per-hour!

Firestone off-the-highway tires cut costs by working extra hours on the roughest jobs! That's because they're built with Firestone Rubber-X, the longest wearing rubber ever used in Firestone tires. Tough Firestone treads and sidewalls defy cuts from rubble and shale. Exclusive Firestone S/F (Shock-Fortified) nylon bodies shrug off bruising shock and impact. There's a Firestone tread and tire design that is job-engineered for your job requirements. Call your Firestone Dealer or Store and ask about Firestone's full line of tubeless or tubed off-the-highway tires and on-the-job tire service.

Rock Grip Excavator Wide Base Rock Grip Excavator

When ordering new equipment always specify Firestone tires—available tubeless or tubed.

Firestone

BETTER RUBBER FROM START TO FINISH

Copyright 1959, The Firestone Tire & Rubber Company

For more facts, use Request Card at page 18 and circle No. 323

A greater amount of longitudinal steel than usual counteracts the tendency of aluminum girders to pull apart.

a special lubricant and torqued to 80 per cent of their ultimate strength.

The girder tops were painted with two coats of zinc chromate and a final coat of asphalt-base paint to prevent contact of the aluminum with the concrete in the deck. No steel chairs were allowed to rest on the girder tops.

After the deck was formed with conventional wood forms, reinforcing steel was set. The two layers of No. 6 bars contained more longitudinal steel than a conventional bridge because of the high expansion of the aluminum girders. When the girders expand, the longitudinal steel tends to hold the slab together. Particular care had to be taken in setting the steel so that it did not touch the frequently spaced shear lugs.

As in a normal continuous bridge, concrete placement for the deck was done in a designated sequence to balance the weight on the girders. Seven separate pours were made to form the 8-inch deck.

Although it is difficult to predict the extent that aluminum will be used in bridges in the future, one

(*Continued from preceding page*)

ficult part of the construction. The plates were large—up to 36 inches wide and 1¾ inches thick. The tolerances were close—give and take ¼ inch on the completed assembly. The welding was tricky—welding of the diaphragms tended to shrink the distance between the girders. It was also the first time that anybody had tried to weld and assemble an aluminum-girder system.

Pullman-Standard, which did the fabrication in its Chicago shops, found that the last girder went together a lot easier than the first. Three plates, ranging in thickness from ½ inch to 1¾ inches, were welded together to form an I-section. Using the inert-gas, shielded-arc welding process, crews made fillet welds on each side of the web simultaneously. The cutting of the plates was done by the shielded-tungsten-arc process known as Heliarc.

A typical main girder has a web ½ inch × 36 inches, a lower flange 1¼×18 inches, and an upper flange ¾ inch × 12 inches. A typical diaphragm has a ½×23-inch web and 1×10-inch flanges. Arrow-shaped shear lugs are welded to the top plate of the girder.

To minimize field connections and to simplify erection, workmen welded the diaphragms to girder sections to form four large subassemblies. Two of the units are 95 feet in length, while the remaining two go up to 126 feet. Each of the 12-foot-wide units contains two girders. Each of the big assemblies was shipped on a railroad gondola centered between two flat cars.

Erection

Once the girder units were on the ground beside the piers, it was no problem to set them in place. Two cranes, an American 399 crawler and a Lorain MC-414 motor crane, lifted the units to the pier tops. Although the heaviest weighed only about 21,000 pounds, two cranes were required in the lifting because of the flexibility of the aluminum. The girders were fixed to the center pier, and set on aluminum sole-plate expansion bearings on steel plates for the remaining piers and abutments.

The single splice in each main girder was made with cover plates and aluminum bolts. The webs connecting the girder units were also bolted. The threads were treated with

VENEZUELAN JUNGLE KNUCKLES UNDER TO "JUNGLE BUSTERS" BY R. G. LeTOURNEAU, INC.

In Venezuela this "Jungle Buster" is
clearing virgin land so fertile that corn i
high 6 weeks after the Crusher makes its fir
This amazing 150-Ton Tree Crusher is p
by the Electric Drive System developed b
LeTourneau, Inc.
Instead of wheels, powerful electric ge
drive two huge, cleated cylinders to cr

LOG LOADER is all-electric. All movements are powered at points of work by electric motors, eliminating transmissions. Fingertip controls allow sensitive, fast log handling without friction clutches.

PULPWOOD TRANSPORTER picks up, carries, places 35-ton pallets. Electric braking controls machine at exact speed selected . . . has no friction surfaces to wear out. Electric Stacker handles, unloads pallets.

SNO-TRAIN built for Army
Arctic snow carrying 50-ton
mendous traction of individual
Electric Wheels and flotation
high, low-pressure tires

thing is certain: as a result of the Des Moines project, bridge engineers will know a lot more about how to build the next one. Since the bridge will be instrumented for testing, much will be learned about the actual performance of the aluminum-girder system.

In longer-span bridges, aluminum has even greater possibilities. When weight is a critical factor, the concrete deck can be replaced with an aluminum floor that will act as a part of the truss or girder system.

Development of the project was under the supervision of Mark B. Morris, director of highway research, and Neil Welden, bridge engineer. For the contractor, Evald Jensen was project manager, and Lloyd Smith was superintendent. THE END

Concrete paving for the aluminum girder-type bridge follows the conventional pattern. A vibrating screed is being used here to level the concrete for the 8-inch deck.

Case history

Concrete forming time cut by 50 per cent

Last fall, Koenig Construction, of Traverse City, Mich., faced the problem of beating the weather in constructing the new $2,500,000 high school at Traverse City. The goal was to get the structure under roof to permit winter construction.

In the 40 workdays required to do the job, 100,491 square feet of concrete was formed.

A portion of the job involved honeycombing the 19½-acre site with foundation and tunnel walls—a task requiring the construction of nearly 2 miles of grade beams in heights of 4 and 7 feet. This was accomplished in only 40 working days with Efco steel forms by a normal-sized crew. Forming time was cut in half, and an over-all lead of approximately 60 days was gained.

The complete operation was carried on with only 5,000 square feet of forms and an average crew of 13 men.

For further information write to the Economy Forms Corp., Dept. C&E, P. O. Box 128, H. P. Station, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 28.

Van Norman gains control of American Pulley firm

Van Norman Industries, Inc., New York City, has acquired working control of the American Pulley Co., Philadelphia, in which it has held a minority interest for the last three years.

Charles F. Myers, president of Van Norman and newly elected president of American Pulley, stated that the latter firm wil continue as a separate company, with no changes in executive or other personnel. American Pulley produces material-handling equipment, power transmission, and pressed-metal specialties.

In Last Five Years Electric Drive Conquers Mountains, Deserts and Jungle On Every Continent

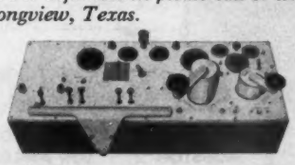
For over five years, Electric Drive machines built by R. G. LeTourneau, Inc. have been conquering wilderness areas of the world . . . doing BIG jobs at lower cost and in less time than conventional equipment.

Basic element in their success is the Electric Wheel . . . major component of the System of Electric Power and Control built by R. G. LeTourneau, Inc. When applied to the Tree Crusher, the same high-torque DC motors with gear reductions are mounted inside the drums. This principle has been uniquely successful in the 150-ton and 70-ton Tree Crushers and is now available to the construction industry in a self-powered Sheepsfoot Compactor. This is a 50-ton machine built to comply with federal dam specifications.

Components of the Power and Control System all were developed — and are manufactured exclusively — by R. G. LeTourneau, Inc. Their dependability — as demonstrated by hundreds of successful applications — has created a new class of heavy duty mobile equipment.

NOW IN EARTHMOVING

Earthmoving machines with electric drive — one of them shown below — have recently been built for the BIG jobs in construction and mining. For information please call or write 2395 South MacArthur, Longview, Texas.



rees pushed over in its path. Matted debris r the Crusher passes is easily piled or

Tree Crusher — and other machines in the Buster team developed by R. G. LeTourInc. — is at work right now opening up s for agriculture and industry at one-third of conventional clearing operations.

R.G. LETOURNEAU INC

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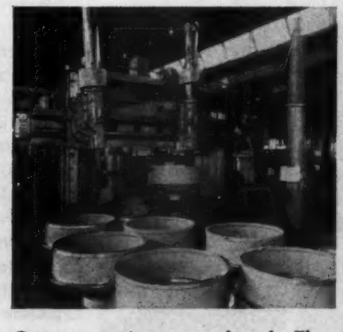
E 105

n picks up 25 tons of logs in one handles single log with jointed tusks. All movements powered points by electric motors and by simple fingertip switches.



GEARS are cut in our own plants for Electric Drive equipment. We make all our own standardized components, including all electric motors, generators and other parts for our System of Electric Power and Control.

ELECTRIC SHEEPSFOOT ROLLER 50-ton electric-drive compactor built to federal dam specifications. Six-foot drums reduce rolling resistance, give feet more thrust. Get details on this M-50, and other machines.

For more facts, use Request Card at page 18 and circle No. 324

Wire-fabric reinforcing for flat-plate concrete floor slabs helps contractor

Form concrete floors in half the usual time

A gain of 15 working days chalked up by Dic Concrete Corp. on an apartment house in New York City was attributed to the use of welded-wire reinforcing. Here, a bundle of welded-wire-fabric mats is guided into place by lathers on an upper-floor deck of the flat-plate slab building.

The use of heavy welded-wire-fabric mats for reinforcing flat-plate structural-concrete floor slabs has brought big savings in construction time and costs on a New York City apartment house. The flat-plate floor system, a relatively new design concept, was used in the 12-story luxury apartment being built by Southmore Realty Corp., a David Rose & Associates enterprise of New York City.

A 2-day work cycle proved feasible for the complete erection of one floor, measuring 140×60 feet, and its supporting reinforced-concrete columns. The lower floors, however, were built under severe winter conditions, and a 2½ to 3-day cycle proved more practical.

Construction men with both owners and concrete contractor—Dic Concrete Corp., Elmont, Long Island, N. Y.—agreed that conventionally reinforced construction of an equivalent area would have taken up to 4 days and required more lathers to place the steel. The use of the mats, many of which were 10×20 feet, reduced time and cost of handling as opposed to placing and tying individual reinforcing bars. A weight reduction was also realized: the fabric weighed 3.6 pounds per square foot, as against 5.2 pounds for conventional steel.

The 5½-inch flat-plate slab is unbroken by offsets for beams and girders, except for spandrels around the perimeter. To assure effective continuity of reinforcement when using the fabric, the contractor used a ladderlike strip of fabric that nested over the adjacent mats. A patent has been applied for on this design.

Work cycle

Following experiments in work methods on the first floor, the sequence of operations fell into a specific pattern.

First day: form columns, frame for deck forms, and place decking; drop reinforcing cages for columns and spandrel beams; place ¾-inch-high chairs for supporting fabric mats away from deck forms; place mats of heavy wire fabric on chairs for bottom steel—generally positive moment reinforcement between columns—and tie; cut out fabric for ducts, boxes, sleeves, conduits, etc.; start placing boxes, sleeves, etc.; start wiring conduits.

Second day: start placing fabric mats for top steel, supporting on 4-inch chairs; complete conduits and placing and tying on chairs of top fabric; place dual concrete hopper, runways, tarpaulins to close in floor below, etc., in preparation for placing concrete.

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Mossman Construction Co.

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Eastshore Freeway, Oakland, Cal.
Grove, Shepherd, Wilson, Kruge, Inc.

For more facts, use Request Card at page 18 and circle No. 325

Lathers place mats on ¾-inch-high chairs. The white rectangles and circles, to the right of the stairwell opening, will be cut out later for ducts, shafts, etc. The re-usable plywood panels are identified by code numbers for later use on upper floors.

Third day: place and finish flat-plate slab.

In warm weather, concrete placement was made on the second day. Many or most of the steps were done simultaneously on different parts of the same floor. Generally, each operation started at the east end of the building and worked west, with succeeding steps immediately behind. Some days, almost every operation, except concreting, took place at once. At least 15 working days were saved on slab and column work.

Deck work, forming

Identification numbers were painted on the panels of plywood decking, which were used in the same place on each of the 12 floors. On the panels, painted markings showed where each box, vent, sleeve, or other break in the slab would be. The fabric mats were then positioned, and lathers came back later to cut out the openings indicated on the forms.

Three sets of identically marked forms were used. As each floor was formed, the job engineer had only to check the markings.

Another speed-up was in the placing of the ¾-inch chairs. Originally, the mats were placed, and then the chairs slipped under. When the lathers became familiar with the placement of each type of mat, they were able, on subsequent floors, to position the chairs first and thus avoid re-handling the mat.

While the step-by-step sequence was followed on top, other work was being done on completed floors. The lathers, while not actually placing fabric mats or column steel, were making up cages of bars for the columns and spandrels.

After at least 72 hours, forms were stripped from the flat-plate floor and columns, cleaned, re-oiled, and prepared for the next leapfrogging crane trip to an upper floor. Meanwhile, another worker used a "giraffe" concrete grinder to smooth out minor bumps and seam ridges to a 3/16-inch tolerance on the under or ceiling side of the slab for later plastering and painting.

Transit Mix Concrete Corp., New York City, furnished the concrete, which had to meet a specification of 3,500-psi strength in 28 days. Darex additive was used in the concrete. Each 5½-inch-thick deck required about 240 cubic yards of concrete, which took about 5½ hours to place. Motor buggies speeded delivery of the concrete from the crane-fed hopper to the deck.

The principal and most unusual

(Continued on next page)

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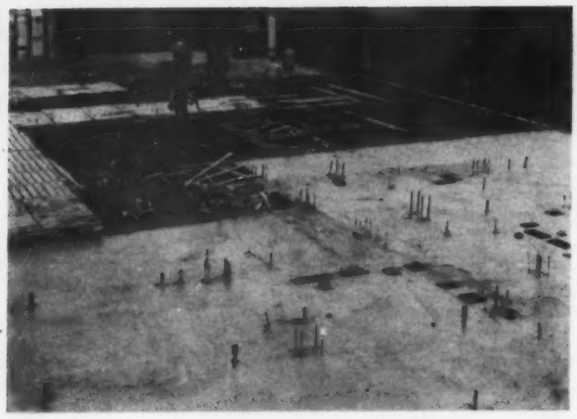

The partially placed floor slab has rectangular openings for plumbing, ventilation, etc., and projecting steel for the next floor's columns. The entire 140×60-foot deck is 5½ inches thick and was completed in 5½ hours.

Wearing a dust mask, a workman uses an electrically driven "giraffe" to smooth bumps and ridges to a 3/16-inch tolerance from the underside of a flat-plate slab. The slabs, unbroken by offsets and jogs, cut plastering and decorating costs.

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MOTOR GRADERS & ROLLERS

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(Continued from preceding page)

problem on the job involved delivery of the 10-foot-wide mats of fabric. Since they came from a New Jersey distributor, the trucks had to come through either the Holland Tunnel or the Lincoln Tunnel early in the morning, on a definite schedule. All traffic in the opposite direction was halted, as the truck straddled the tunnel's center line. No fabric could be delivered on Monday mornings because of unusually heavy inbound traffic. Once at the job, the mats had to be taken off the street and spread out in a prearranged order on the bridge over the sidewalk, ready for the next floor.

The building, scheduled for completion in October, will be finished off in white glazed-brick curtain wall, with a marble trim to give a horizontal accent. The first floor, trimmed in granite with a stainless-steel-faced marquee, will house professional offices.

Frederick Rose is in charge of construction for David Rose & Associates, Elihu Rose is assistant, and James A. Raimonde is superintendent.

Job engineer for the Dic Concrete Corp. is Arthur D'Amato. The latter foreman and his assistant are Arthur and Thomas Nugee. Chief estimator for Dic is Anthony Bertone. Nat Pierdiluca is job superintendent.

THE END

Transportation chiefs tour Trailmobile plant

A group of 60 French transportation executives recently visited the Cincinnati, Ohio, manufacturing plant of Trailmobile, Inc., as part of a tour of truck-trailer, truck, bus, and passenger-car manufacturing facilities in the United States. The tour was sponsored by L'Aluminium Francais, France's leading producer of aluminum and aluminum products for the purpose of studying the use of aluminum in vehicles used by the U. S. transportation industry.

On the Trailmobile plant tour groups of eight were accompanied by an interpreter and a member of the company's industrial-engineering staff. Afterward, the visitors viewed a movie on recent developments in trailer manufacture.

Bill Rigney, Horace C. Stoneham and Carl Hubbell

"Welcome to the newest giant in San Francisco"

says Horace C. Stoneham, President of the San Francisco Giants baseball team

Here's the "big-league" hitter in crushing equipment batting 350 tons an hour, all day long!

The largest portable crushing plant in existence, a Universal 293QS warms up to turn out 200,000 tons of aggregate for the San Francisco Giants' new baseball stadium to be completed in 1959.

Not visible, but "pitching" to the giant 293QS plant from the left is another Universal plant, a 'dozer-fed, 3042 primary jaw crusher.

Flanking Horace Stoneham for the "warm-up" at the new stadium site are these well-known Giants, Bill Rigney and Carl Hubbell — always interested in seeing "fast delivery", whether from men or machines.

Under Charles L. Harney, Inc., San Francisco contracting firm, the stadium project will require 150,000 tons of 1½" crusher-run base material and 50,000 tons of ¾" type-"B" plant-mix.

"Our schedule makes this a 'no-time-out' project", says Joseph P. Silvestri, vice-president of the Harney firm, "so we picked the Universal 293QS for its extraordinary capacity and its versatility on the job".

To star in a major club like the San Francisco Giants, a ball player must become an unerring performer. Speed and stamina — plus precision and plenty in reserve — are his characteristics . . . and the ability to do more than one thing, and do it well.

All these are characteristics, too, of the Universal 293QS, a "pennant-winner" among portable crushing plants for the past 20 years.

Offering the most varied line of portable plants on the market, Universal is capable of serving everybody from the "sandlot" operator who wants less than 50 tons an hour, to the "big-league" producer of aggregates demanding 350 or more tons an hour.

So whether you're in the "minors" or the "majors", give us a whistle. We'll come running out of the dugout — on-the-double — to serve you.

UNIVERSAL 293QS

The equivalent of a stationary plant on wheels, this portable crusher is truly the "giant" of them all!

Three stages of reduction with only two crushers. First stage: jaw crusher. Second and third stages: Universal "Twin-Dual" rolls.

Exclusive Universal (30") "TwinDual" roll crushers allow up to 100% wider discharge opening of the 2036 Universal jaw. Space and weight savings are achieved by mounting the roughing and finishing rolls of the "TwinDual" unit on two shafts instead of four.

Skid-mounting of the jaw enables the plant to meet highway weight limitations for fast, easy movement.

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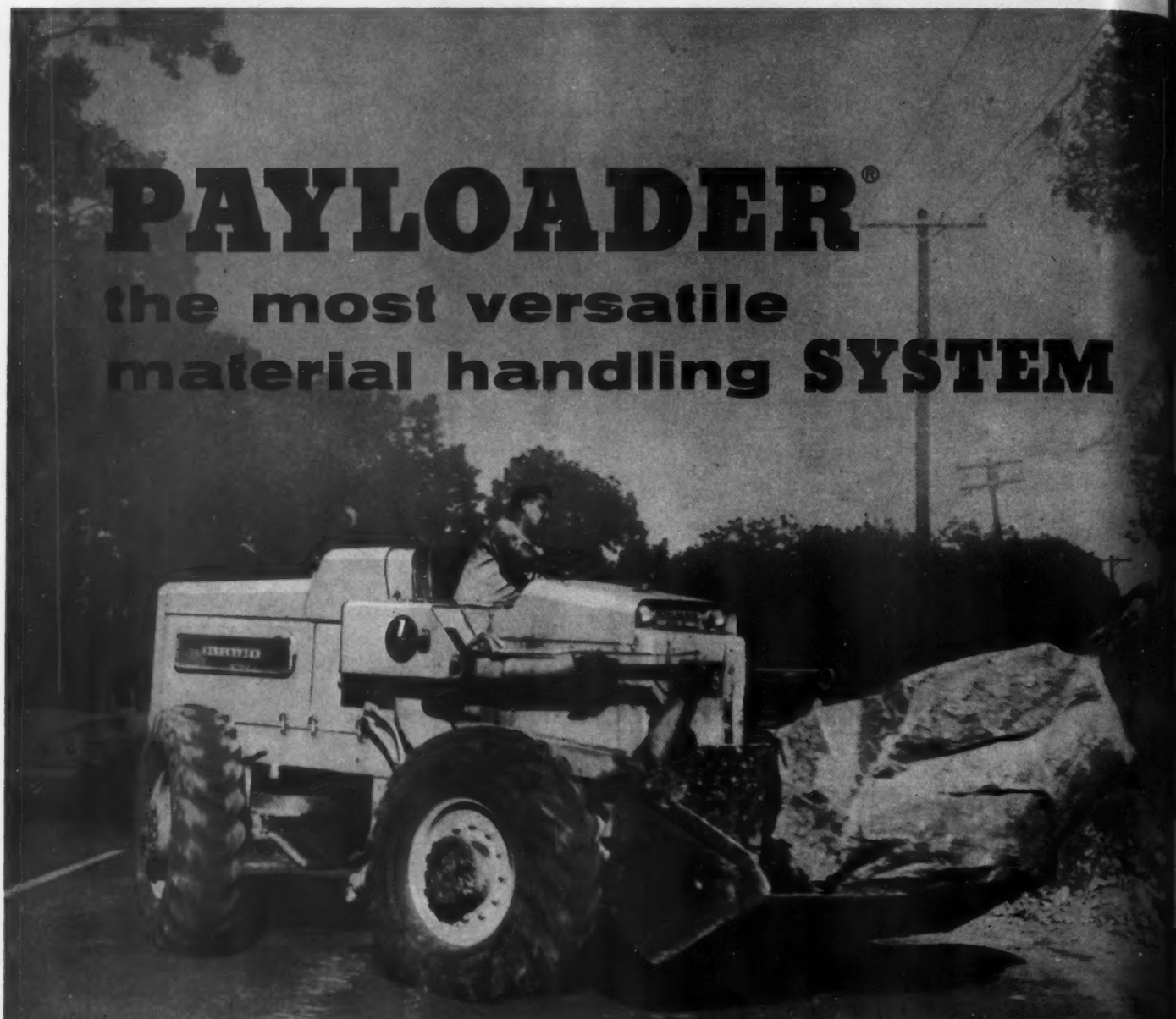

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When you invest in a "PAYLOADER" you get *more* than a tractor-shovel . . . you get a complete material handling SYSTEM . . . actually an entire fleet of construction and maintenance equipment to handle, not only the regular tractor-shovel jobs, but scores of specialized jobs, normally requiring specialized machines.

Widest Range of Tools

A "PAYLOADER" can be equipped with a greater variety of proven attachments than any other tractor-shovel, each tool specifically and exclusively engineered for the "PAYLOADER" applications. Most are easily and quickly installed right on the job . . . many permit the use of the bucket in conjunction with the attachment. Only a "PAYLOADER" offers you this maximum versatility, productivity and economy.

Reduces Your Equipment Investment

With one basic machine, that does scores of different jobs, you eliminate the big investment in specialized single-purpose machines. A "PAYLOADER" will handle these specialized jobs, equally well, and then can be quickly converted back into a shovel or another useful attachment. You cut operating costs as well as your equipment investment, since your regular tractor-shovel operator soon becomes an expert at all the specialized jobs. And you can keep your "PAYLOADER" busy earning money more days in the year.

Wide Range of Sizes

Proven "PAYLOADER" tractor-shovels are available in a wide range of sizes to meet most any production requirements, and they are backed by the largest, most experienced network of distributors in the industry.

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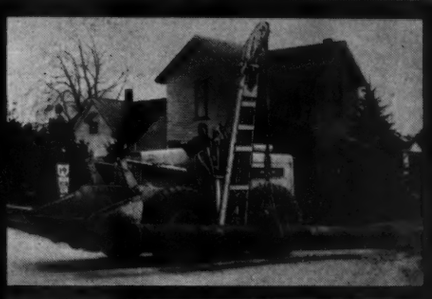
Back Hoe

Digs, swings, and dumps in 180° radius. Long digging reach, smooth, accurate operation. Installed or removed in a matter of minutes.

Blacktop Spreader

Lays hot or cold mix for patching or paving. Lays up to 8' widths and 0" to 6" thickness. Hopper capacity is two cubic yards.



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Lifts up to 10 tons at 4' overhang. Completely hydraulic control with telescopic boom reaching out to 16'. Cable drum has free spooling release.

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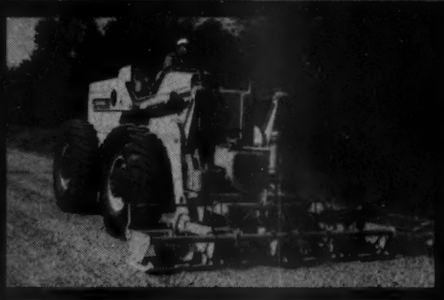
4-in-1 Bucket

Most versatile bucket for many jobs. Hydraulically controlled, functions as regular bucket, bulldozer, clamshell or self-loading scraper. No end to its uses.



Vibratory Compactor

Four 30" shoes, equipped with individual electric motors, develop specified densities in granular soils. Self-contained easily attached and removed.

Fork Lift

Easily and quickly interchanges with bucket, to handle pallets of brick, loads of lumber, sheeting, etc. Spacing of forks adjustable. Hydraulic controls.

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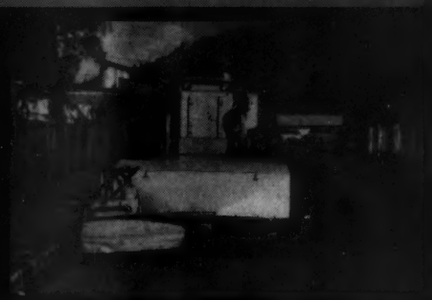
Leaf Loader

Picks up leaves and debris and discharges into truck. Cuts leaf handling costs by 30%. Will also handle light snow. Easily installed and removed.



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6-B-1

The use of the Gates forming system on this job permitted the same panels to be used for both curved and straight surfaces. Costs were less than 19 cents per square foot for inside and outside forming.

Case history

Pare foundation costs with forming system

The spex for an Englewood, Colo., structure called for a circular basement foundation 70 feet in diameter and 9 feet 4 inches high; an access tunnel 58 feet long and 9 feet high; and a retaining wall 275 feet long and 9 to 10 feet high.

For the circular portion alone, over 2,000 square feet of forming was erected and made ready for placement of the concrete at a cost of 14 cents per square foot. Complete stripping costs were 4¾ cents per square foot, bringing the total cost to less than 19 cents per square foot for inside and outside forming.

With the Gates forming system, the same panels were used both for the curved surfaces and the straight.

Finegold & Chavers was the general contractor, while Russell Graham handled the forming. Both firms are located in Denver.

For further information write to Gates & Sons, Inc., Dept. C&E, 80 S. Galapago St., Denver 23, Colo., or use the Request Card at page 18. Circle No. 37.

Army engineers design variable-height pier set

A variable-height pier set, to speed erection of tactical and line-of-communications bridges and to reinforce civilian bridges for military loads, has been developed by the U. S. Army Engineer Research and Development Laboratories, Fort Belvoir, Va. Designed for a maximum height of 100 feet, the pier can support 150-foot-span triple-truss tactical bridges with a 100-ton eccentric load totaling 275 tons. It can be erected under various site conditions to the desired height.

The pier consists essentially of columns of various lengths, bracing, and top and bottom grillage. Much of the bracing is made from pipe, and other parts are of standard structural rolled-steel shapes. All connections are bolted.

The type of construction varies with the height and width of the pier. The heaviest number is a P-10 joist that weighs 1,836 pounds. The upper grillage systems can be adjusted to provide small increments in pier heights not possible with the column lengths alone. There are 34 different components including hardware and derrick parts.

A 5-ton military bridge truck and a 2½-ton cargo truck are adequate to transport the pier sets.

Chemical makes canvas resistant to rot, weather

A new treatment to give canvas improved resistance to rot and weather has been developed by the Agricultural Research Service of the U. S. Department of Agriculture. The treatment is based on applying a chemical whose resin-forming qualities penetrate the outer portion of the cotton-fiber cell wall to become part of the fiber rather than just a coating.

Soil tests reportedly indicate that the new treatment makes cotton virtually immune to rot and mildew. Untreated cloth buried in soils containing fabric-destroying bacteria was in shreds within a week, while the treated fabric retained 100 per cent of its breaking strength after 21 weeks' burial. Cost of the treatment is expected to be relatively low. It is not yet known when the chemical will become available commercially.

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Buy Pacal Heat Treated Plow Bolts, too. They have triple strength and hardness. They will not loosen or stretch and heads will not wear off. Especially developed to provide the longer wear required by Pacal X-TRA-EDGE BLADES.
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Case history: A novel agreement saved money for both the building contractor and the Carlisle Finishing Co. when the latter drew up plans for a new plant. The contracting firm, Daniel Construction Co., Inc., of Greenville, S. C., put up a 70× 140-foot Armco steel building for its use during construction of the plant. When the work was completed, the steel building was turned over to the Carlisle company for use as a permanent warehouse. For further information on steel buildings, write to **Armco Drainage & Metal Products, Inc.**, Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 50.

BLADES

he popular choice

County Highway Official, Iowa—"After one year's use new Pacal blades have saved our county 40 to 50% in blade and bolt costs."

County Highway Engineer, Iowa—"Special hardened blades very satisfactory here. Switching to this three-piece arrangement 100%."

County Highway Official, Minnesota—"380 hours on machine before blades were worn out."

County Highway Superintendent, Indiana—"Results very good . . . getting 4 times the wear over old ¾" x 6" double bevel curved-blades."

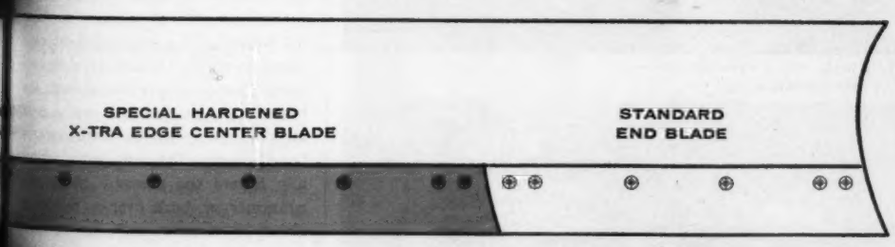
County Highway Official, Iowa—"Very pleased with new three-piece blade . . . receiving four times the wear of blades previously used."

State Highway Engineer—"Have used 15 sets of ½" to ¾" x 8" blades. They wear very straight and 50-60% longer than ½" x 8" blades."

County Highway Official, Missouri—"Pacal ½" to ¾" x 8" special hardened blades giving about 5 times more wear than ½" x 6" blades."

County Highway Superintendent, Ill.—"Using ½" to ¾" x 8" blades and know they outlast 5 to 6 pairs of ½" x 6" double bevel curved blades."

City Street Commissioner, Missouri—"Three-piece ⅝" to ⅞" x 8" hardened blade wearing 5 to 6 times as long as ½" x 6" double bevel curved blade."



Profile of Pacal X-TRA-EDGE BLADE shows how you can get more steel on the wearing edge with no increase in waste. New Pacal hardened center section resists crowning, makes your blades wear two to six times longer, cutting blade costs even more. Join the number of satisfied users—write or call Pacal!

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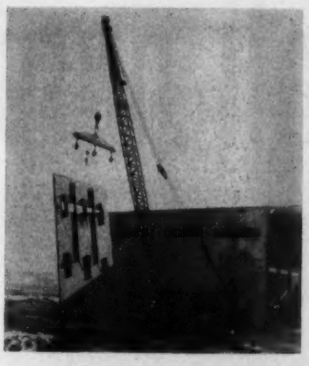
For more facts, use Request Card at page 18 and circle No. 330

Case history

Large tilt-up panels form warehouse walls

One of the biggest tilt-up jobs in Ohio was recently completed at the new Mt. Vernon, Ohio, warehouse and plant of the Kieckhafer-Eddy Division of the Weyerhaeuser Timber Co.



Six Superior stress equalizers and two strongbacks were used on each panel to provide a safe and efficient pickup.

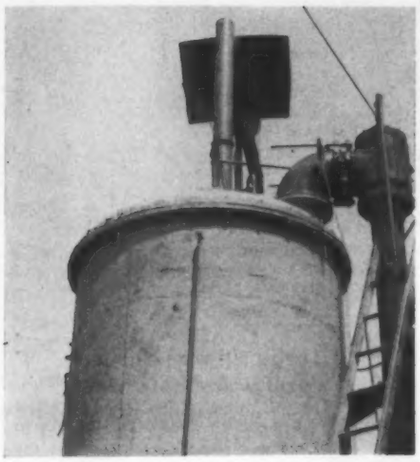
The insert-placing layout for the concrete panels was made by Superior Concrete Accessories, Inc., of Franklin Park, Ill., suppliers of tilt-up accessories on the job. Because of an unusually wide and shallow window area near the top of each panel, proper insert-system engineering was of utmost importance. Six stress equalizers and two strongbacks were used on each panel to provide an efficient and safe 6-point pickup. Superior 1-S inserts with 1½-inch coil bolts anchored the equalizers and strongbacks.

A 60-ton crane was used for lifting and positioning the 54,000-pound panels, which were 36 feet 6 inches high, 20 feet wide, and 6 inches thick. A total of 65 panels was placed on this job.

For further information on these concrete accessories, write to Superior Concrete Accessories, Inc., Dept. C&E, 9301 King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 81.

H. K. Porter division to build Virginia plant

The Disston Division, H. K. Porter Co., Inc., Philadelphia, will build a $1,200,000 plant on a 90-acre site in Danville, Va. The one-story steel and masonry structure, housing 155,000 square feet of floor space, is expected to be completed in early September.



This is the top of a 6-foot-diameter tank for cooling sand, showing the feed trap at top and the Evactor air pump. The unit is part of a vacuum cooling system that makes it possible to cool sand and aggregates. Such a system will be used this summer in lowering temperatures of sand and aggregates going into concrete for Charlotteburg Dam near Newfoundland, N. J.

Materials

Real cool sand, man

Heat of hydration should pose no problems this summer in the construction of Charlotteburg Dam, a concrete masonry structure on the Pequannock River near Newfoundland, N. J.

The structure to provide additional reservoir capacity for the city of Newark is under construction by Berlanti Construction Co. of Harrison, N. Y. Concreting operations are scheduled to start some time this month, with Cooney Bros., Tarrytown, N. Y., supplying central-mix concrete to Berlanti for placing in the forms. The producer will use a Croll-Reynolds Hightovac system, a steam-jet vacuum process, for cooling the sand and two sizes of aggregate. He will also cool the mixing water by the Croll-Reynolds vacuum chilling method. Job specifications require that placing temperature of the concrete should not be above 60 degrees F.

Sand and aggregates to be cooled will be moved on a conveyor belt to three closed tanks, of various sizes up to 7 feet in diameter and 20 feet in height, located above the weigh batcher. In these closed vessels, holding 30,000 pounds of sand and 45,000 pounds of aggregate, or enough for 30 cubic yards of concrete, the temperature of the sand can be lowered from 80 degrees F to 40 degrees F in 30 minutes. The smaller aggregates can be cooled to 35 degrees F in the same time.

Concrete is to be mixed in a pair of 4-yard tilting mixers, formerly used in the construction of Eisenhower Lock on the St. Lawrence Seaway project, and then discharged into buckets mounted on flat cars. The cars will move out from the plant to be picked up by a cableway consisting of an anchored tail tower and a movable head tower rolling along an 800-foot track.

The Croll-Reynolds Hightovac vacuum process of aggregate and sand cooling consists of placing surface-wet material in a vacuum-tight container to which a steam-jet compressor is connected. In this system, the water is the refrigerant, and it is in direct contact with the heat source—the aggregate. The compressor gradually lowers the pressure inside the container or tank over a period of about 30 minutes, until the absolute pressure is at .25 inch mercury, during which time the temperature of the aggregate will have dropped from 80 degrees F to about 35 degrees F.

The vacuum cooling system has been a gradual evolution from an air cooling process conceived by John R. Hightower while examining the concrete-cooling problem at Alatoona Dam, Cartersville, Ga. (See "Concrete Dam Rising Inside Big Cofferdam," C&E, October, 1947, page 2.) Hightower has designed and built over 10 such plants. The latest development, the Hightovac system, was used in 1957 to cool sand on the Derbend

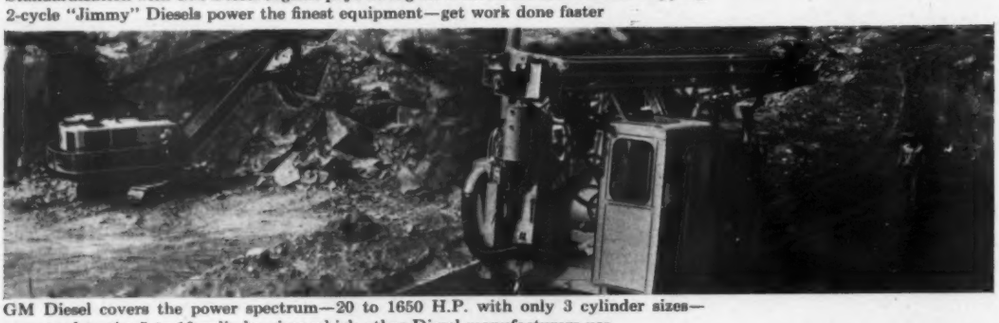
NOW YOU CAN STANDARDIZE WITH THE

all purpose power line

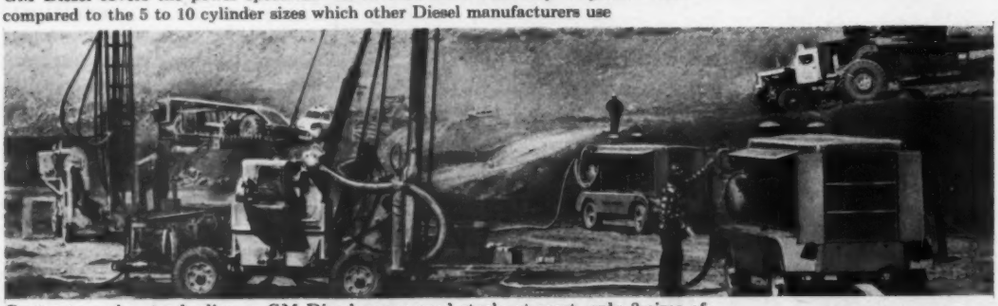
(20 TO 1650 H.P. IN ONLY 3 CYLINDER SIZES)

... and get all the benefits of GM Diesel standardization in any type of equipment built by over 250 leading manufacturers

Standardization with GM Diesel engines pays off big for contractors because fast-stepping, 2-cycle "Jimmy" Diesels power the finest equipment—get work done faster



GM Diesel covers the power spectrum—20 to 1650 H.P. with only 3 cylinder sizes—compared to the 5 to 10 cylinder sizes which other Diesel manufacturers use



Contractors who standardize on GM Diesel power need stock, at most, only 3 sizes of wearing parts—maintain full protection with the smallest investment in spares

GM DIESEL

PARTS AND SERVICE WORLDWIDE

In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

DETROIT DIESEL ENGINE DIVISION, GENERAL MOTORS, DETROIT 28, MICH.

For more facts, use Request Card at page 18 and circle No. 331

Vacuum cooling system to reduce the temperature of aggregate for use in dam concrete

Khan Dam project in Iraq. It is currently being employed in the construction of Hartwell Dam, a U. S. Army Corps of Engineers project on the Savannah River in Georgia.

According to Croll-Reynolds, the vacuum system is more efficient than an air cooling system. It is also more practical, since it is possible to control the moisture content of both the coarse aggregate and the sand, as by-products of the cooling process. While not yet accepted as a standard construction procedure, the manufacturer states that it is possible to precool the mix water and cement as grout to any desired temperature above freezing, and then add the grout to the mixer.

Other advantages suggested by Croll-Reynolds are:

1. The vacuum system has no dust problem.
2. Cooled aggregates can be stored over week-ends.
3. Initial cost of the vacuum system is less than that of the air system.
4. While operating costs vary, they are generally less for the vacuum system than for other types.
5. Operating personnel for the vacuum system will be about one-third that of the air system using ice, and the maintenance cost of a vacuum system—since it has no moving parts except the steam and the motors on the pumps and boiler—will be less than that of compression refrigeration.

Parsons, Brinckerhoff, Hall & Macdonald of New York City is the consulting engineer on the Newark water-supply project. Joseph Goldbloom is the resident engineer. THE END

Bethlehem Steel news

A new mill for rolling steel reinforcing bars will be added to the Steelton, Pa., plant of Bethlehem Steel Co., Bethlehem, Pa. Construction of the mill, which is estimated to take about 18 months, will be started next month.

The new bar mill will be composed of three buildings: the first will house the heating furnace and mill proper; the second will house the shears and shipping facilities; and the third will be a hot-bed building.

Fairbanks, Morse names

Sheldon K. Howard has been named manager of the Diesel Division, Fairbanks, Morse & Co., Chicago, to succeed Carroll E. Dietle, who resigned. Howard was previously manager of the diesel department of the firm's Atlanta, Ga., branch.

Case history

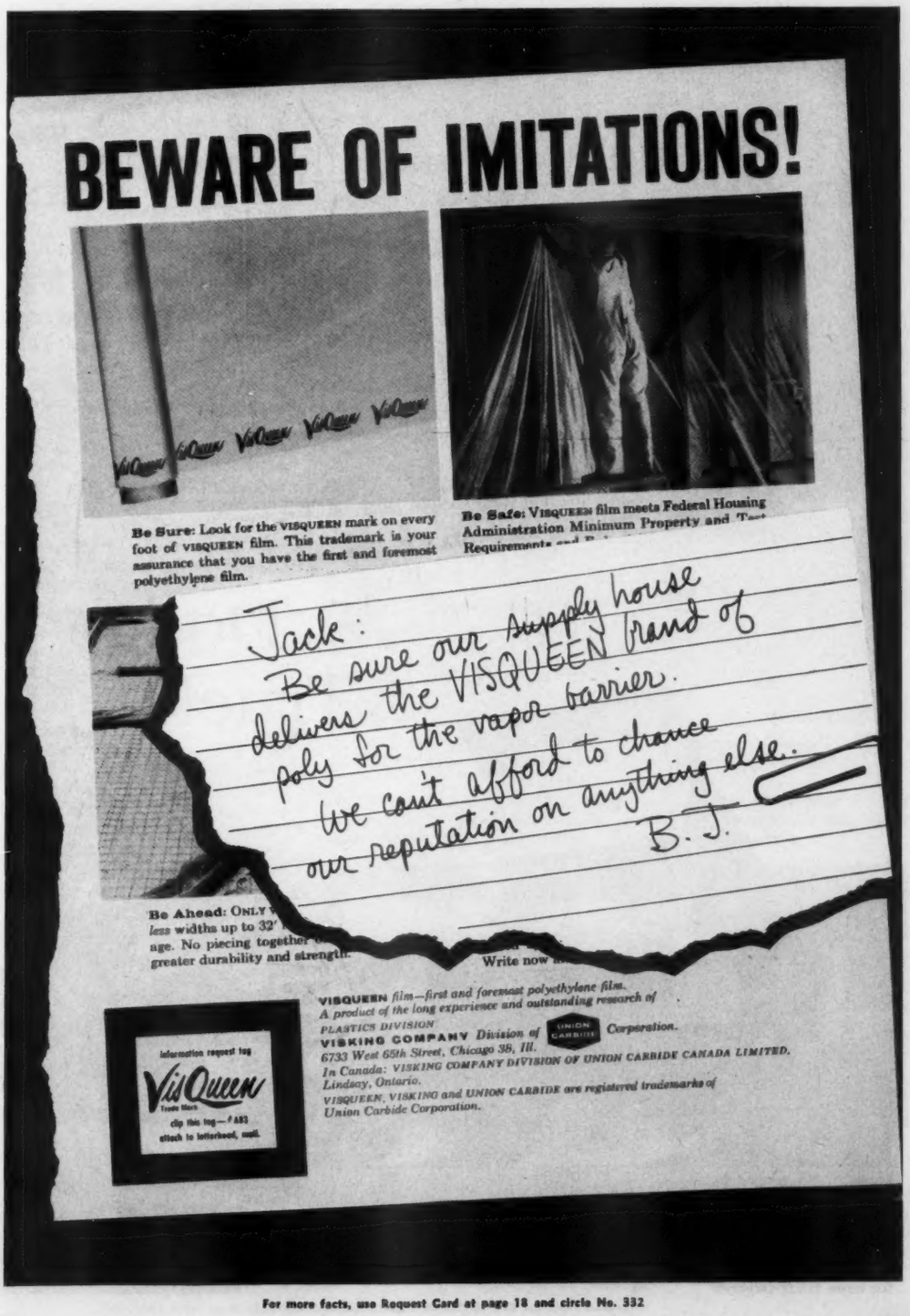
Ripper mauls tough rock, cuts need for blasting

The Gerald E. Brewster Co., of Avenal, Calif., reports using a Caterpillar D9 tractor with a Shepherd M371 ripper to advantage on a granite rock excavation job around the north escarpment of Lake Isabella, Calif.

The firm points out that normally such a job calls for explosives with conventional shovel-wagon work. However, with this 93,000-pound tractor-dozer-ripper combination, some 185,000 cubic yards of tough rock is being ripped by single and tandem tractors. Three tractor-scraper units, fitted with the M371 ripper, averaged about 200 cubic yards of rock hourly.

For further information on these rippers, write to the Shepherd Machinery Co., Dept. C&E, 3400 S. San Gabriel River Pkwy., Los Angeles, Calif., or use the Request Card at page 18. Circle No. 109.

A Cat D9 tractor equipped with a Shepherd M371 ripper reduces a solid granite promontory to loose rock for the scrapers.


BEWARE OF IMITATIONS!
Be Sure: Look for the VISQUEEN mark on every foot of VISQUEEN film. This trademark is your assurance that you have the first and foremost polyethylene film.
Be Safe: VISQUEEN film meets Federal Housing Administration Minimum Property and Test Requirements
Jack:
Be sure our supply house delivers the VISQUEEN brand of poly for the vapor barrier.
We can't afford to chance our reputation on anything else.
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Write now
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VISQUEEN film—first and foremost polyethylene film.
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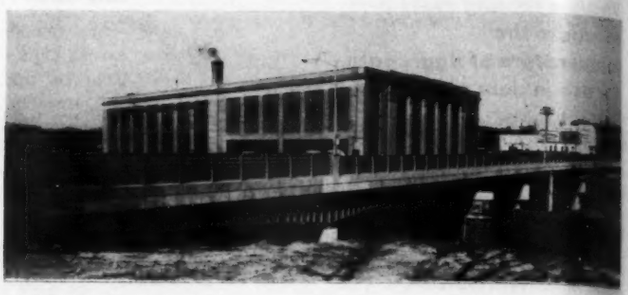
For more facts, use Request Card at page 18 and circle No. 332

Materials

Bridge guardrails meet four stiff requirements



Curved aluminum guardrailing supplied by L. B. Foster Co. for this railroad overpass in Baltimore, Md., is strong enough to prevent cars and people from going over the side onto the high-tension wires and tracks of the Pennsylvania Railroad, right. The aluminum is low in cost and maintenance.

A highway overpass built above an electrified railroad requires special guardrailing. The extra hazards call for a barricade strong enough to keep both traffic and pedestrians from going over the side, and solid and high enough to prevent pedestrians from dropping objects onto the high-tension wires. Above all, the guardrail must be low in cost and in maintenance.

All of these conditions are met by the new barricade installed on a 5-span bridge over the main line of the Pennsylvania Railroad in Baltimore, Md.

Guardrailing installation

The high railing is made of aluminum extrusions and cast-aluminum posts. Spaced 8 feet apart, the posts are anchored to a 2-foot-high parapet with two ¾-inch galvanized steel U-bolts. The inside faces of the posts are curved to a 9-foot radius. They stand 6½ feet above the sidewalk and taper from 9 inches at the base to 6 inches at the top.

Aluminum channel extrusions, faced with curved flutes, span the posts. Six of the 9-inch-wide channels are stacked atop each other to form a 54-inch-high 8-foot-long panel for the barricade. The panels are fastened to the inside of the posts' front flanges with ½-inch round bolts with washers and lock nuts.

A total of 1,115 linear feet of barricade was installed on the bridge, an important link in the new Jones Falls Expressway.

The barricade was designed and fabricated by L. B. Foster Co., Pittsburgh. THE EDS

29,000 lbs. - and all muscle!

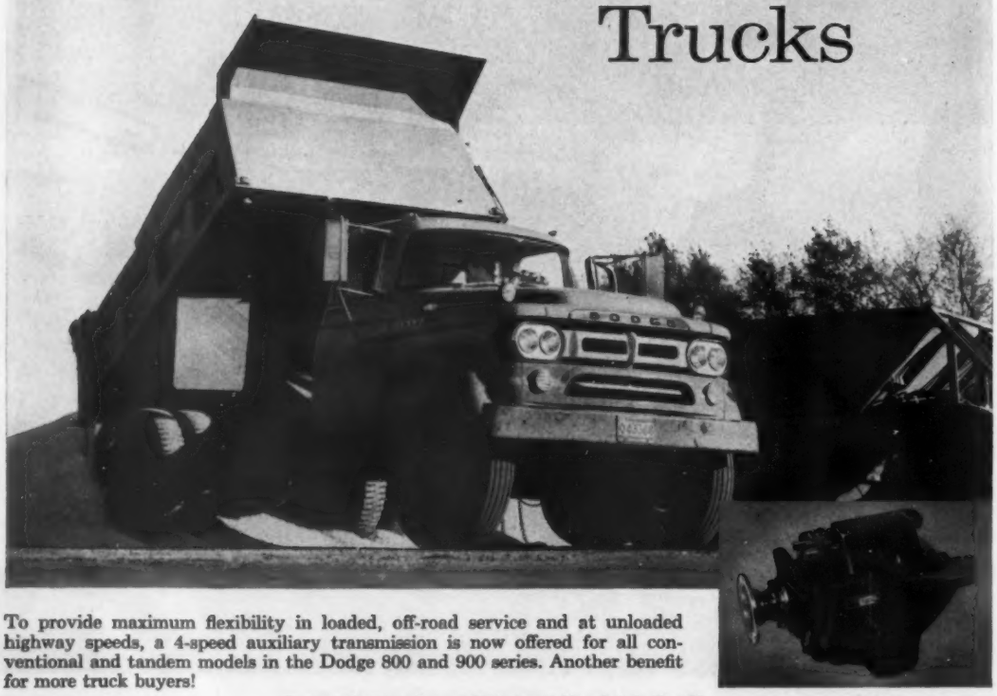
Bring on those gruelling, earth-moving, profit-making jobs and just watch this mighty Dodge D800 dump truck clean them up.

It weighs in at 29,000 lbs. maximum G.V.W. It's big and tough. It's packed with power and the right equipment to get the job done in short order. Special transmission, if you need it—special axle, springs, brakes—whatever your kind of trucking requires.

Big-load hauling was never easier . . . never more profitable . . . than in new, improved '59 Dodge "Job-Rated" heavy-duty trucks with G.V.W.'s to 49,000 lbs., G.C.W.'s to 65,000 lbs.

Your Dodge dealer has full information. He'd like nothing better than to talk to you, and tell you why . . .

today, it's real smart to choose Dodge Trucks



To provide maximum flexibility in loaded, off-road service and at unloaded highway speeds, a 4-speed auxiliary transmission is now offered for all conventional and tandem models in the Dodge 800 and 900 series. Another benefit for more truck buyers!

For more facts, use Request Card at page 18 and circle No. 333

Bausch & Lomb honors two at annual ASP meeting

Two graduate students from Cornell University have been selected as winners of the Bausch & Lomb photogrammetric awards presented at a recent meeting of the American Society of Photogrammetry. First prize went to Nedret Berkay, who is on a training program with the U. S. N. Hydrographic Office. He received B. S. and M. S. degrees in chemical engineering from Cornell.

Wei-Wen Yu, second-prize winner, is a Ph. D. candidate in structural engineering at Cornell.

The awards are sponsored by Bausch & Lomb Optical Co., Rochester, N. Y.

Part of Haskins' Allis-Chalmers fleet is shown in a big cut on one of his early Oklahoma Interstate 40 jobs.

OKLAHOMA INTERSTATE 40 TAKES SHAPE FAST:

Haskins Beats Schedule on Four Consecutive Contracts

Ben Haskins, Cordell, Oklahoma, contractor, finished his fourth contract on Interstate highway 40 in Oklahoma 35% ahead of schedule.

The first three were handled with similar speed. Interstate 40 is a new four-lane, controlled access highway which, when completed, will link Los Angeles, California, and Durham, North Carolina, with connecting Interstate routes to the Atlantic Coast. On his fourth contract — a 1,200,000-yd, $497,000 job at the west edge of Clinton, Oklahoma — Haskins timed his Allis-Chalmers motor scrapers at 7.5 minutes per 3.26-mile cycle. Deducting 30 seconds for loading, Haskins had 7 minutes left for travel and spreading . . . a remarkable 27.7 mph *average*. These units are rated conservatively by Allis-Chalmers at 27.9 mph in fifth gear.

Abount 50% of the hauling was upgrade . . . averaging 3%. The motor scrapers had to negotiate a 15-ft dip from haul road level to detour around a bridge. The TS-260's took this detour in fifth gear. Another 2,000 feet of the haul road passed through a business district in suburban Clinton on existing Route 66. Regular traffic was maintained.

The Oklahoma Interstate 40 jobs handled by Haskins called for loading sandy clay, sandstone and shale. Most of it was ripped for fast, efficient loading. Two unusual cuts were encountered — 55 and 65 feet deep, 1,000 feet long and about 400 feet wide at the top.

To handle jobs like this in less than scheduled time takes top-notch equipment. Haskins is proving he has it. His selection of motor scrapers was made after he timed loading cycles, scaled loads and recorded travel speeds to determine comparative yards moved per hour by the three leading makes. He chose Allis-Chalmers TS-260 motor scrapers. The rest of his fleet, all Allis-Chalmers, was selected just as carefully.

Ben Haskins' extreme dedication to detail both in the planning of his jobs and the selection of equipment has been rewarded with fast . . . yet solid growth for his 13-year-old company. Haskins personally checks every job to be bid . . . every machine to be considered for purchase. The unusual efficiency of his operations and equipment helped him complete his Interstate 40 contracts 35% ahead of schedule . . . has earned him the healthy respect of his fellow contractors who have to bid against him.

Haskins figures on . . . and gets better than 90 per cent availability of equipment during the 270 ten-hour working days he averages each year. You are entitled to performance like this on your jobs. You'll get it with Allis-Chalmers construction machinery. Your dealer has the equipment, facilities and know-how to put you out in front of your schedules. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

Some of Haskins' new TS-260's loading tough clay, sandstone and shale. The material was ripped for most efficient handling.

Allis-Chalmers equipment used by Haskins on Interstate 40 contracts included TS-260 motor scrapers, HD-21 crawler tractors, HD-16 crawler tractors, HD-11 crawler tractor, HD-11G tractor shovel, FORTY FIVE motor graders.

TS-260 230 hp, 17 yd heaped, 44,800 lb

move ahead with **ALLIS-CHALMERS**

. . . power for a growing world

For more facts, use Request Card at page 18 and circle No. 334

Rapid gains reported for lime stabilization

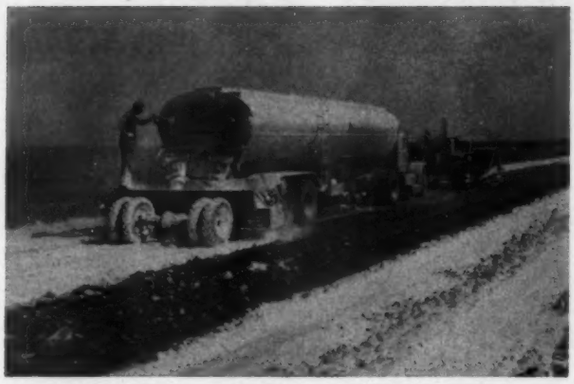
According to a recent survey by the National Lime Association, hydrated lime, which is still a relatively new stabilizing agent for roads, enjoyed its peak year in 1958 when awards reached 20,100,000 square yards of roads, airport runways, and parking areas. This amount, equivalent to 1,435 miles of 24-foot-wide pavement, represents a 33 per cent increase over 1957. These figures include lime-pozzolana mixtures in addition to straight lime-soil combinations. Approximately 240,000 tons of lime was involved in the 1958 awards.

Lime is used with paved roads for new construction, reconstruction, and patching. Percentages of lime employed range from as low as ½ of 1 per cent for modification (lowering plasticity) of base courses to 6 per cent for stabilizing highly plastic clay subgrades and subbases.

The largest single lime-stabilization project was completed in January, 1959, at the Bergstrom Air Force Base at Austin, Texas, aggregating over 1,250,000 square yards of stabilized subgrade under jet-bomber runways.

At present, 26 states have now used at least some lime for soil stabilization. Others plan its use in 1959.

For further information write to the National Lime Association, Dept. C&E, 925 15th St. N. W., Washington 5, D. C., or use the Request Card at page 18. Circle No. 72.



Hydrated lime is being spread on heavy clay subgrade on the Interstate 35 project near Waco, Texas. This section was later paved with asphaltic concrete.

State, county, and local highway administration

"Studies in Highway Administration," Bulletin 200 from the Highway Research Board, contains seven papers. Topics discussed are principles of delegation of authority and responsibility in a highway department; decentralization in highway administration; Wisconsin's education and training for highway-construction engineering aides or technicians; and a proposed program for development and research in local rural highway administration.

The remaining papers describe a study of human relationships in county road administration; the effect of the new Interstate System on intergovernmental relations in Kansas; and considerations and methods for developing metropolitan-area transportation studies.

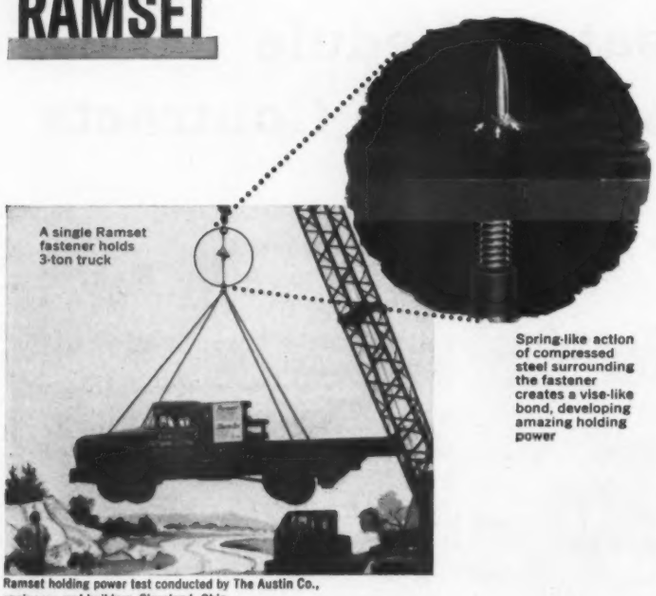
Priced at $1, the bulletin may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Goodrich expansion in foreign areas

Within two years, The B. F. Goodrich Co., Akron, Ohio, plans to be operating three new tire plants and a special-purpose synthetic-rubber plant abroad. A new tire plant in Brazil is under construction and should begin operations in November, 1959. Work on a new tire plant in Australia is under way, and production is scheduled to start in the first quarter of 1960. A third tire plant is being engineered in Iran and is expected to be in production by January, 1961. A synthetic-rubber plant in Holland should be in production this August.

The company has acquired latex gathering, concentrating, and shipping facilities in Malaya. In addition, B. F. Goodrich in Liberia, Africa, will soon complete planting of 10,000 acres of natural rubber.

ONLY RAMSET


A single Ramset fastener holds 3-ton truck
Spring-like action of compressed steel surrounding the fastener creates a vise-like bond, developing amazing holding power

Ramset holding power test conducted by The Austin Co., engineers and builders, Cleveland, Ohio

offers austempered fasteners with such superior holding power

Even under the most demanding workloads, Ramset's austempered Red-Tip fasteners assure more holding power and greater fastener strength. Austempering, Ramset's high-heat slow-quench treatment, puts extra strength, toughness and dependability into every Ramset Red-Tip fastener.

Ramset's wide variety of fastener sizes puts the *right* fastener on each job—you don't have to "make-do" with off-size pins or studs. Ramset assures positive, guaranteed fastenings into tough steel, concrete or masonry faster and easier, and at lower in-place cost. Consider Ramset's many advantages and the "100-for-100" guarantee—call your Ramset dealer (under "Tools" in Yellow Pages) for details.

In addition to powder-actuated fastening, the versatile Ramset System includes Shure-Set® hammer-in tools for light fastening, and Ringblaster® heavy-duty kiln gun.

Ramset® Fastening System

WINCHESTER-WESTERN DIVISION • OLIN MATHIESON CHEMICAL CORPORATION
12191-F BEREA ROAD • CLEVELAND, OHIO

For more facts, use Request Card at page 18 and circle No. 335

Get up to one extra man-hour a day

with MILLER Tilt-Top's drive-on, drive-off loading!

Rigs moved three times or more a day . . . means that men and equipment are occupied with getting the rig on or off a trailer six times! With MILLER Tilt-Top's ONE man, TWO minute loading you save from five to ten minutes each time over the slower loading more awkward trailer types. Cutting non-productive between-job-time . . . boosts time on the job for man and rig every day . . . or as much as ten to twenty hours a month! And look at the features . . . you pay no premium for quality . . . just call and ask your distributor!

TIMKEN ROLLER BEARINGS used on axle assemblies for long life at road speeds
10" DEEP SIDE CHANNELS provide rigid support right out to the edges for wide tread rigs
HYDRAULIC TILT CONTROL (Optional) Cushions tilt action—lowers like a feather
HEAVY DUTY BRAKES (Optional) Available in air, vacuum, or electric types

Miller® Tilt-Top Trailer Inc.

*F.O.B. Milwaukee, Wis. Complete with platform and tires. Brakes and optional equipment extra.
*Plus 10% Federal Tax

456-U S. 92nd Street, Milwaukee 14, Wis.

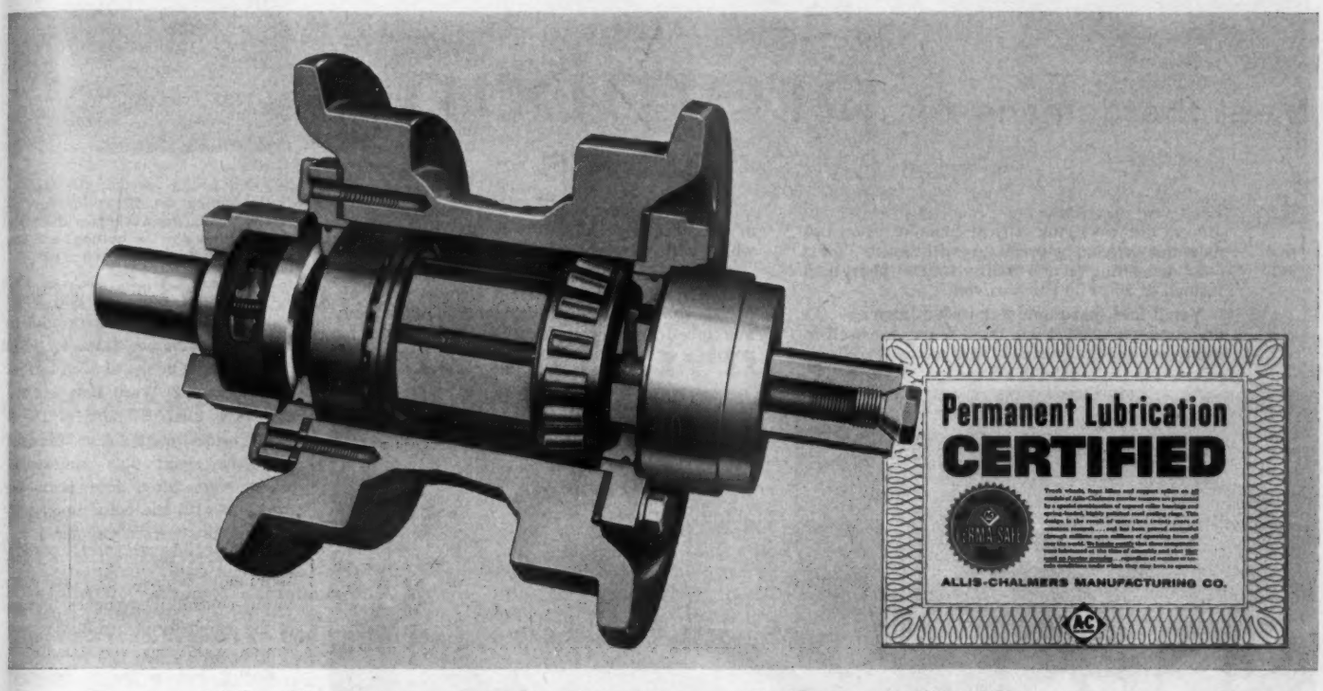
For more facts, use Request Card at page 18 and circle No. 336

The Positive Seal
PERMA-SAFE
Wheel

Truck wheels, front idlers, support rollers on all models of Allis-Chalmers crawler tractors

Lubricated at factory need no further greasing

Safe, permanent lubrication of truck wheels, front idlers and support rollers requires seals that will keep all moisture and other foreign materials out ... the lubricant in. Only Allis-Chalmers offers seals which are positive because of their use in combination with tapered roller bearings. The Allis-Chalmers Positive Seal, tapered roller bearing design has been proved in the field through more than 20 years ... through millions upon millions of operating hours. When introduced in 1938, this outstanding design replaced bushing-type assemblies similar to those used today in other tractors. Allis-Chalmers abandoned bushing-type truck wheels because, in its opinion, they could not be positively sealed.



Every Allis-Chalmers crawler tractor — whether produced today or any time during the past 17 years — offers its owner the twin secrets of permanent lubrication.

1

Allis-Chalmers tapered roller bearing wheels roll much more freely than ordinary bushing types ... reduce power-robbing friction ... give you more of your engine's horsepower at the drawbar or moldboard where it pays off in production. The tapered roller bearings maintain precise alignment of all parts ... protect the perfect seal by minimizing side thrust and wobble ... eliminate the uneven wear that makes positive sealing of bushing-type assemblies impractical.

2

The "Positive Seal" that makes permanent lubrication possible is effected by two steel sealing rings working in combination with the tapered roller bearings. These two rings, smoother than glass, are held firmly together by strong steel coil springs. One seal remains stationary; the other turns with the truck wheel. These seals are microfinished to near perfect flatness. Their surfaces fit together so precisely that nothing can get through ... a perfect seal.

Your Allis-Chalmers dealer will be happy to help you estimate the savings in time and material that are yours with Allis-Chalmers permanent lubrication. See him today. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

move ahead with ALLIS-CHALMERS

... power for a growing world

For more facts, use Request Card at page 18 and circle No. 337

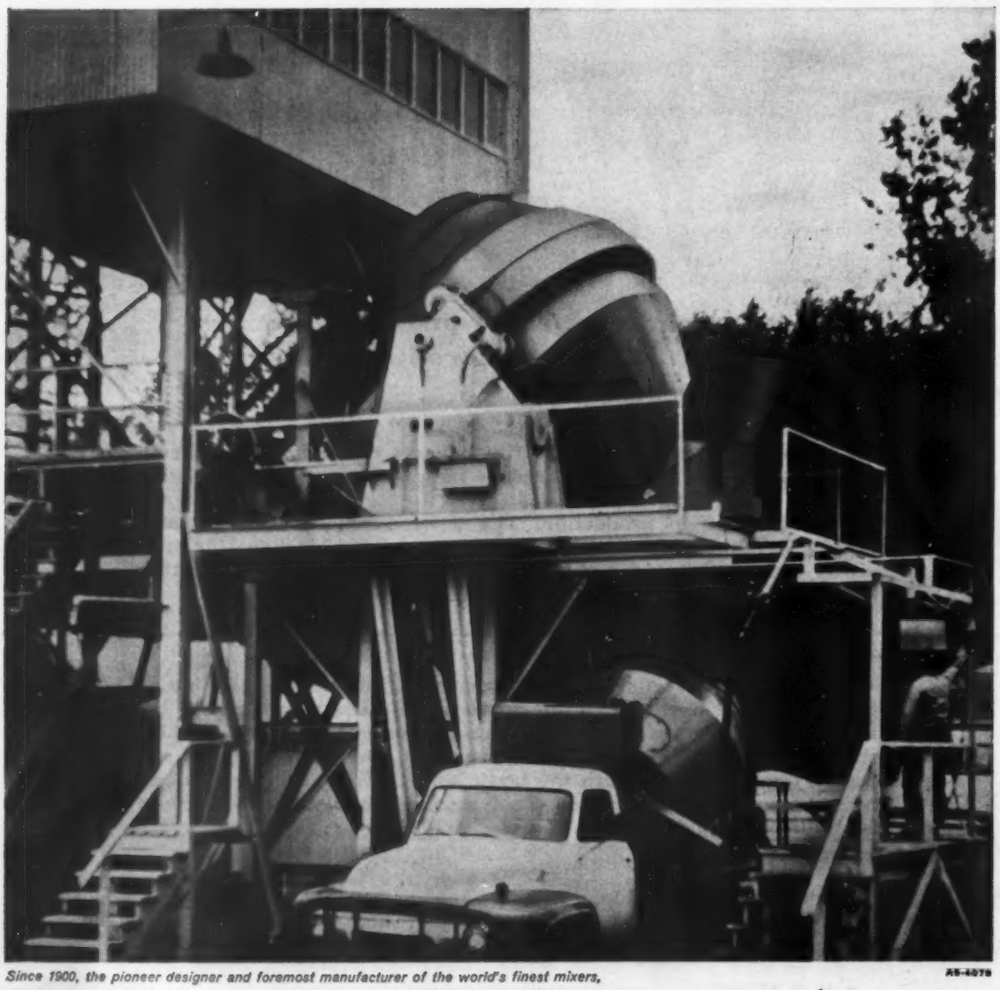
Case history: A worker drives studs into the concrete wall of a screen chamber under construction as part of the Charlotteburg dam-and-reservoir project for the city of Newark, N. J., water supply. The powder-operated Drive-it tool anchors the studs that support the artificial granite facing around the foundation wall above the grade line. Southshore Masons of Bayshore, N. Y., has a subcontract for the facing. For further information on the Drive-it, write to **Powder Power Tool Corp.**, Dept. C&E, 7526 S. W. Macadam Ave., Portland, Ore., or use the Request Card at page 18. Circle No. 92.

Meet the demand for premixing with SMITH TILTERS

Each year more and more quality-conscious engineers are specifying critical concrete. *You* can meet this demand by premixing with Smith Tilters —by depending on one quality-trained plant man instead of 20 or 30 truck drivers.

You'll find that premixing isn't a luxury — it's an economy!—and it will quickly pay for itself in increased quality, business and goodwill. What's more, it will save you money and lengthen the life of your fleet by reducing wear on truck mixers, which will only have to run at agitating speeds.

The superior mixing action and sturdy construction of Smith Tilters — from 2 to 10 yards capacity—have made them the standard of the ready mix industry. Ask your local Smith distributor for proof — or write us direct for more information.



Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers,

AS-4878

THE T. L. SMITH COMPANY
Milwaukee 1, Wisconsin • Lufkin, Texas

SMITH

Affiliated with Essick Manufacturing Company, Los Angeles, California

For more facts, use Request Card at page 18 and circle No. 338

Case history

High-strength bolting speeds bridge erection

By using high-strength bolts to join sections, the Karl Koch Erecting Co., Inc., New York City, erected the steelwork for a 1,250-foot continuous-girder bridge in just 35 working days. The bridge spans the Methuen River on new State Route 28 in Massachusetts.

On this bridge across the Methuen River, bolting cut 10 to 20 days off erection time. Ironworkers with no special training did the bolting, and only simple scaffolding was required.

Bolts were installed by 2-man teams of erection workers with no special training. A total of 44,000 high-strength bolts, supplied by Russell, Burdsall & Ward Bolt and Nut Co., were used. Sections of the 5-girder bridge, made up of five spans over the river, plus approaching spans, were lifted into place and fitted up with the bolts. Special fitting-up bolts were not required.

Bolts were tightened to a predetermined torque by pneumatic torque-controlled wrenches. Because of the simplicity of installation, only simple scaffolding was required.

Koch's bolting teams reportedly were able to install about 290 fasteners per day.

For further information write to the Russell, Burdsall & Ward Bolt and Nut Co., Dept. C&E, 100 Midland Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 26.

Unique government award given to Thew executive

M. B. Garber, vice president of The Thew Shovel Co., Lorain, Ohio, received the first citation of its kind ever awarded by The Agriculture, Construction and Mining Equipment Division of the Business and Defense Services Administration of the U. S. Department of Commerce. Garber was given the award for contributions made in serving his country in the War Production Board, the National Production Authority, and the BDSA.

Koehring California news

Clark asphalt paver feeders, Models 4590 and 6009, are now in production at Koehring Co. of California, Stockton, Calif. Both models are powered by a gasoline engine. The company is a subsidiary of Koehring Co., Milwaukee.

Allis-Chalmers tractor-dozers push fill into swamp holes which had been mucked out by tractor-scrapers and draglines.

Tough Job Tests Machine Efficiency...

CONTRACTOR CONVINCED ALLIS-CHALMERS COMBINATION IS BEST CHOICE

St. Paul, Minn.—Loading rock-laden, sandy clay—then spreading in swampy muck and loose sand provides a real test of earth-moving efficiency. Kimmes-Bartelma Construction Company applied its Allis-Chalmers fleet to just such conditions on a 1,900,000-yard segment of St. Paul's new freeway system. The Hastings, Minnesota, contractor's TS-360 motor scrapers with HD-21 pushers handle the demanding job faster and at lower cost than any other combination of machines available, partner Charles Bartelma reports. He thoroughly tested three other well-known makes—convinced himself that his Allis-Chalmers fleet is the best choice.

Allis-Chalmers TS-360 with HD-21 pusher gets good loads of dead, sandy clay in as little as 30 seconds.

Much of the credit for excellent cycle time goes to the Allis-Chalmers FORTY FIVE motor grader which keeps haul roads in top condition.

Kimmes-Bartelma is handling the clearing, grading and sub-base preparation on a 2.9-mile section of the north approach to the proposed St. Paul freeway (trunk highway 35-390). Work on the $1,469,000 contract started in October, 1958, and the job is expected to be completed by July, 1959. Approximately 10% of the 1,900,000 yards of excavation is swamp work. Dragline-loaded, tractor-drawn scrapers haul out the muck ... motor scrapers bring in sand fill ... tractor-dozers spread it into the mucked-out areas where it is compacted to specifications.

The motor scrapers get a workout on both ends of the haul. The dead, rock- and sand-laden clay is tough to load ... yet the TS-360's, with assists from torque converter HD-21's, get good loads in 30 to 35 seconds. At the other end of the haul, the scrapers spread in soggy, mucked-out swamp holes. Even as the fill progresses, loose sand slows spreading.

A compensating factor, however, is the finely dressed haul road maintained by an Allis-Chalmers FORTY FIVE motor grader. The excellent condition of the haul road permits scrapers to highball the 2,300-foot haul ... cut average cycle time to 3 minutes, 33 seconds. Bartelma calls this good time in *any* conditions ... *excellent under those prevailing on this job.* "The low, wide bowl makes loading easy and the forced ejection gets all material out in a hurry," he said. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

HD-21 225 net engine hp
Torque converter drive 56,260 lb approx. as shown

TS-360 20-yd capacity
280 horsepower 49,050 lb

move ahead with ALLIS-CHALMERS

... power for a growing world

For more facts, use Request Card at page 18 and circle No. 339

Almost 500,000 square feet of concrete was placed in the construction of a new Des Moines shopping center. To handle the job, the contractor rented 20,000 square feet of Symons steel-ply forms.

Case history

Concrete-placing costs cut with prefab forms

Substantial labor savings and fast setting and stripping were two of the major benefits of prefab forms noted by Bernard Greenbaum of Bernard Greenbaum & Associates, builder and developer of Des Moines' new Merle Hay Plaza Shopping Center.

The job involved placing a lot of concrete—65,000 square feet of contact area for the foundations and grade beams alone. Retaining walls and slab decking required another 400,000 square feet.

To do the job, Greenbaum rented 20,000 square feet of Symons steel-ply forms. Exceptionally versatile, the same forms were used both on spandrel beams and retaining walls.

For further information write to the Symons Clamp & Mfg. Co., Dept. C&E, 4249 W. Diversey Ave., Chicago 39, Ill., or use the Request Card that is bound in at page 18 of this issue. Circle No. 55.

More capacity... size for size!

Crosby-Laughlin Load-Rated® Shackles

Designed to new safety standards

- Heat treated bows
- Heat treated alloy pins
- Guaranteed capacity
- 50% stronger than ordinary shackles
- Safe working load forged in every shackle

Stocked and sold by leading mill supply, construction and industrial equipment distributors.

Write for FREE specifications catalog listing the most complete line of drop forged fittings for wire rope and chain.
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AMERICAN HOIST & DERRICK COMPANY
FT. WAYNE, INDIANA

Manufacturers of Crosby Clips and "Load-Rated" Blocks . . . Crosby-Laughlin "Load-Rated" Fittings . . . Lebus Load Binders and Snatchblocks.

For more facts, use Request Card at page 18 and circle No. 340

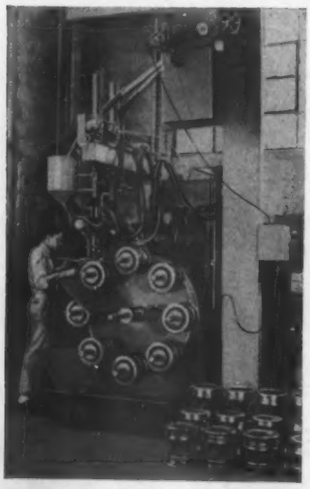
Concrete paving studies detailed in bulletins

Highway Research Board Bulletin 201, "Rapid Tests for Aggregate and Concrete," describes the use of the Swiss hammer for estimating the compressive strength of hardened concrete. This test method can be used in the field as well as in a laboratory. The second paper, on a rapid freezing and thawing test for aggregates, describes a method using a water-alcohol solution as the freezing medium in place of the common sulfate soundness test. This bulletin is priced at 50 cents.

Bulletin 202, "Performance of Granular Subbases Under Concrete," reports on a concrete-pavement subbase study on an Ohio experimental highway constructed in 1952. The performance of subbases for concrete pavements under repetitive loading is the subject of the second paper, which contains data on the performance of subbases under 500,000 repetitions of load. The type and gradation of subbase materials, as well as the placement condition relative to density and moisture content, were evaluated. The third paper reports the results of a laboratory study to investigate the performance of a variety of base-course samples with different gradations. The price of the bulletin is $1.60.

Both bulletins may be purchased from the HRB, 2101 Constitution Ave., Washington 25, D. C.

Revolutionary *Rexarc* Enables High Speed Production in Tractor Roller Rebuilding



(Pictured Above) A complete *Rexarc* installation at Michigan Tractor & Machinery Co., Detroit, Michigan.

Here is the new *Rexarc* MS-8 Automatic Twin Head Roller and Idler Welder and Positioner that mounts 8 rollers at a time. Hydraulic indexing enables virtually a continuous automatic welding operation. Twin heads build up both sides of roller simultaneously.

Factory engineer trains your operator, assuring excellent results from the very beginning of welding operations, at no additional cost.

- **The new Rexarc Automatic Flux Circulating System assures profits unlimited. An adequate flux supply is maintained automatically at all times, eliminating manual flux handling. The operator just empties a new bag of flux occasionally onto the vibrating screen—that's all.**

Phone, wire or write today for complete information about this revolutionary profit-maker.

Manufactured by

THE SIGHT FEED GENERATOR COMPANY
SALES OFFICES AND FACTORY, WEST ALEXANDRIA, OHIO, U.S.A.

For more facts, use Request Card at page 18 and circle No. 341

Goodyear splits its New York territory

The New York sales and service district of the Industrial Products division of Goodyear Tire & Rubber Co., Akron, Ohio, has been divided. The two districts will be known as New York District, North, and New York District, Metropolitan.

H. L. Jinkerson, assistant manager at New York City, has been named manager of the North district; and B. E. McClelland, formerly manager of the whole-sales district, will be manager of the Metropolitan district.

Sales, service, and administration facilities for both districts will be located at the company's New York City office.

TEC frameless dump trailers

Made by THE HEIL CO.

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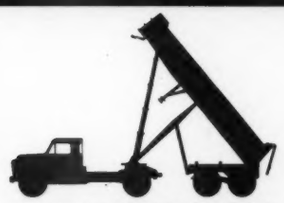
FOURTEEN HY-TEC UNITS, OPERATED BY JAEGER SAND & GRAVEL, MILWAUKEE, WIS., THE TWO NEAREST UNITS ARE IN WEIGHT-SAVING ALUMINUM

HY-TEC FRAMELESS TYPE
U.S. Patent No. 2,846,267



HY-SPILL FRAMELESS TYPE
(Available Only From Heil)
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TEC Division **THE HEIL CO.** DUMP BODIES and HOISTS

TEC Division, 1285 West 70th Street, Cleveland 2, Ohio

Labor review

New Jersey ironworker local must pay $5,133 damages for breaking no-strike clause

Federal Judge Reynier J. Wortendyke, Jr., filed an opinion awarding $5,133 damages to Schacht Steel Construction, Inc., Hillside, N. J., to be paid by Shopmen's Local 545 of the International Association of Bridge, Structural and Ornamental Iron Workers, for breaking a no-strike clause in its contract. The union contract was with the Structural Steel and Ornamental Iron Association of New Jersey, Inc., of which Schacht Steel is a member.

The judge decided that Local 545 violated the no-strike provision of its bargaining contract, controlled by the Labor-Management Relations Act, by causing a work stoppage at the Schacht plant for 1½ days beginning February 19, 1958. Union workers left their jobs when Schacht fired a machine-shop tool operator for refusing to operate a new type of automatic electric welding machine without being given a helper.

Judge Wortendyke held that the question of supplying a helper was arbitrable under the law. He said the union's argument—that the job classification, wage rate, and the need of a helper were matters of mutual agreement and not of arbitration—was without merit.

Judge Wortendyke assessed the $5,133 damages for the 1½-workday stoppage on the basis of evidence concerning Schacht's administrative and operating costs for the first 9 months of 1958, and dividing the total by 160 workdays for the period, to arrive at a daily overhead that was fixed at $3,422. By multiplying this amount by 1½ days, he arrived at the $5,133 verdict.

Cleveland employer groups settle with teamsters on 2-year, 22-cent package

Two Cleveland employer groups settled with Excavating and Building Material Drivers Local 436 of the teamsters on a 2-year, 22-cent package for about 3,000 drivers.

The package is split into 12 cents this year and 10 cents next year for regular drivers, while drivers of ready-mix trucks and semitrailers, as well as batch-plant operators, get 14 cents this year and 11 cents next.

Detroit riggers, engineers sign contracts covering wages, pensions, vacations

The latest building-trades contracts in Detroit were signed by Hoisting and Portable Engineers Local 324, which settled for a one-shot 15-cent wage increase, and Riggers Local 575, which negotiated a pension plan, plus a wage increase and a vacation bonus.

The engineers' 15-cent raise brought the rate for most classifications to $3.65 hourly, under a contract with the Steel and Metal Erectors Association. Employer contributions of 10 cents hourly for health-welfare, 10 cents for vacations, and 5 cents for holidays are continued from the old contract. The new agreement expires April 30, 1960.

The engineers' new 3-year contract with the Heavy Haulers Division of the Michigan Cartagemen's Association increased the hourly wage rate 14 cents on May 1 to $3.35, and guarantees 10-cent raises in 1960 and 1961. The local also negotiated improvements in its pension plan. The new contract increases the employer contribution from 10 cents hourly to 4 per cent, which, under plans now being worked out, will permit a monthly retirement benefit of $125 and reduction in the retirement age.

The riggers also negotiated their first vacation fund this year, to be financed by a 10-cent hourly contribution. Each workman will receive his share of the fund annually on December 15.

Richmond cement masons raised 25 cents per hour in new 3-year contract

Richmond, Va., cement masons agreed on a 3-year contract that will mean 25 cents more an hour in wages.

The initial increase—10 cents—brings the rate to $2.60 an hour, with another 10 cents due May 15, 1960, and a final nickel to be added May 15, 1961. The agreement does not mention hiring. Virginia, as a right-to-work state, bans the union shop.

5 Big Advantages of EUCLID'S TC-12 Twin-Power Crawler

Functional "years ahead" design, combined with unequalled power, makes the new series TC-12 the best all-around performer in the big tractor field. Its big power and big performance helps beat the pinch on profits...on every kind of big tractor work. Check these cost-cutting features:

Twin Engines with a total of 425 net horsepower... separate Torqmatic Drives each consisting of torque converter and semi-automatic transmission...more workability for heavy dozing, ripping, push-loading and towing than any other "super" tractor.

Independent Track Drives give the big TC-12 almost unbelievable mobility and maneuverability. With its separate power train and Torqmatic Drive, each track can work all the time because its power and speed is individually controlled. Operator has immediate, positive control for quick turns and side slope work.

Rigid Track Alignment is constantly maintained because each track is positioned to its main frame...each half of the tractor oscillates on a big diameter transverse shaft which provides maximum traction in rough going and increases track life. The tractor can be easily split into two halves for transport from one job to another.

Fast, Easy Operation is achieved by the separate Torqmatic Drives and simple controls. There's no master clutch...changes from one speed range to another are made under full power. Excellent visibility front and rear, and comfortable operator's seat, help to increase productive capacity. Good machine balance and stability, and "fast on its feet" performance, make the TC-12 unequalled for any big tractor work.

Service Accessibility that cuts downtime to a minimum is a feature of TC-12 design. Unitized assembly of converter, transmission and drive case components permits fast servicing or replacement without major tear-down of other parts. For example, both drive sprockets can be removed or replaced in about one-third the time required for the same work on a competitive big tractor. Planetary final drives can be serviced without breaking track or pulling sprocket.

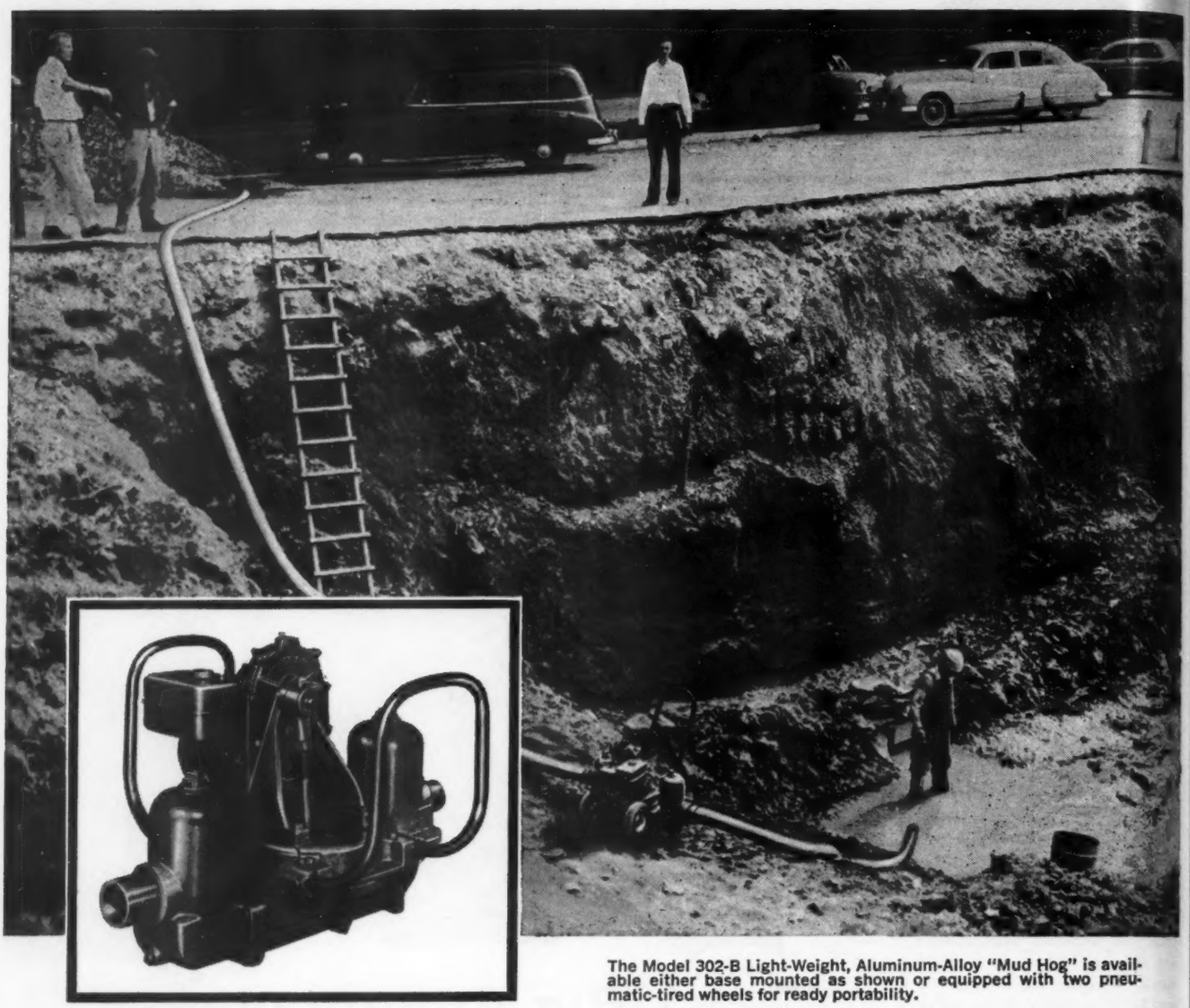
Whatever the job, if it's a big tractor application the TC-12 is your best choice. This Twin-Power crawler gets more work done every shift with less downtime than other big tractors. Ask your Euclid dealer for facts that show why the TC-12 brings the best return on investment.

GM GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

For more facts, circle No. 343→



The Model 302-B Light-Weight, Aluminum-Alloy "Mud Hog" is available either base mounted as shown or equipped with two pneumatic-tired wheels for ready portability.

SEEPAGE WATER IN BUILDING EXCAVATION CONTROLLED WITH EFFICIENT MARLOW PUMPS®

Construction of a new office building containing a swimming pool is under way at York Road and Walker Avenue in Baltimore. During excavation a Marlow Model 302-B lightweight "Mud Hog" was used to remove muddy seepage water to keep the hole workable. According to Charles R. Marshall, Job Superintendent for C. W. Jackson Associates, Inc., "the pump handled as much as 18,000 gallons in 6 hours and operated on suction lifts as high as 20 feet."

Mr. Marshall states that this light-weight "Mud Hog" is the best pump he has ever had. "As far as I'm concerned, it's a *real* pump," he adds. He particularly likes its light weight and ready portability... moved from one pumping location to another with speed and safety.

In addition to the "Mud Hog," Marlow also builds a complete line of AGC rated self-priming centrifugal pumps. These pumps are all readily available from any of the three strategically located Marlow plants. Look for the heading "Marlow Pumps" in the "Yellow Pages" of your classified telephone directory or ask your Marlow dealer about the Marlow line of contractor's pumps for tough job application.

Marlow PUMPS®

MARLOW PUMPS®

DIVISION OF BELL & GOSSETT CO.

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For more facts, use Request Card at page 18 and circle No. 344

Avoid legal pitfalls

City contract award survived opposition

THE PROBLEM: *A city let sidewalk construction at $78,000 to the lowest bidder who was $2,000 under the others. Was the award subject to attack by a taxpayer on the grounds that: (1) the bid was not received until 10 minutes after the advertised time limit for filing bids; (2) the bid was not opened in the presence of all the officials whose presence was required by charter provision; (3) the bid was made by an individual, but the contract was awarded to a corporation formed by him; (4) the bid was in an envelope that was unsealed when tendered, though sealed before being received; and (5) the performance bond was not properly executed and notarized?*

THE ANSWER: No. (Nielsen v. City of St. Paul, 88 N. W. 2d 853, decided by the Minnesota Supreme Court.)

The court said:

1. The slight delay in filing the bid was due to a change of the place of opening the bids from the advertised place to another office on another floor of the same building. No prejudice to anyone resulted, for the bids were not opened until other business was disposed of. Decisions of the courts of Alabama and New Jersey are cited to the effect that such slight delays in filing a bid or in acting upon them do not vitiate bidding.

2. Although the charter provided for the presence of the city comptroller at the opening of bids, as one of several other officials, the city was so fully represented that the comptroller's presence was not necessary.

3. The bid was made by the "Northwestern Flooring Co.," which was unincorporated, but the contract was awarded to a corporation formed by the same owner under the same name after the date of the bid. The court cited legal authority for the proposition that such technical lack of identity of bidder and contractor is not necessarily fatal to an award.

4. If the bid was unsealed when handed to the purchasing agent, it was returned by him to the bidder's representative for sealing before it was accepted.

5. Neither the surety on the performance bond nor any third party could challenge the validity of the bond, or contract secured by it, because of an irregularity in signing or notarizing the documents. Reference was made to what a New Jersey court said where a contract was sustained although the bidder had attached a bid bond rather than a certified check: A municipal body "has inherent discretionary power and, what is more, a duty to secure, through competitive bidding, the lowest responsible offer, and to effectuate that accomplishment it may waive minor irregularities."

Letters of evidence

THE PROBLEM: *In a suit by a subcontractor against a prime contractor, in which the latter claimed that the contract had not been fully performed, the prime contractor offered in evidence a copy of a letter written to the subcontractor. The letter dealt with certain work to be performed by the subcontractor. But there was no proof that the letter was ever mailed, and the writer of the letter did not appear at the trial as a witness. Could the contents of the letter be considered by the court?*

THE ANSWER: No. (United States v. National Construction Co., 155 Fed. Supp. 368, decided by the United States District Court, Northern District of New York.)

All courts seem to agree that a copy of a letter is not valid evidence in favor of the sender against the addressee, if the latter does not admit its receipt, unless there is proof of mailing of the letter properly addressed and bearing required postage.

Road-building machines

THE PROBLEM: *New York Tax Law, Sec. 1, provides that a "road-building machine" is not to be regarded as a "motor vehicle." Highway Use Tax Regulations (Article 11) state:*

"A road-building machine is used for road-building operations and is also used to transport materials to customers. It is excluded from the definition of motor vehicle only when used for road-building operations. When it is used for any other purpose it is a motor vehicle. Therefore, a permit and plate should be obtained for such motor vehicle. The mileage of the vehicle when it is used as a road-building machine is not subject to tax, but its mileage when being used for any other purpose is taxable."

In constructing a 3-mile section of

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Whatever your job...wherever you are...

You'll find FORD INDUSTRIAL ENGINE SERVICE *nearby!*

Ford power users can get the service they need *when they need it* by calling the Ford Industrial Power Headquarters nearest to them.

Located everywhere from coast to coast, Ford Power Dealers offer prompt parts delivery and immediate on-the-job service to help you keep costly downtime at a minimum. Because each dealer carries a stock of normal replacement parts, you need never invest in a large parts inventory of your own. What's more, you get these parts at low cost because of Ford's modern production and distribution methods.

If you need a complete engine or power unit installation, check Ford's full line of dependable engines. These engines range from 134 to 534 cubic inches—including Ford's 220- and 330-cubic inch Diesels. And for really big jobs, there are three Super Heavy Duty V-8's—now available with 5- and 8-speed transmissions and the new 6-speed automatic transmission.

To get the *right* engine for your application—with readily available service that will help keep your operating costs down—select a Ford Industrial Engine.

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YOUR JOB IS WELL-POWERED WHEN IT'S FORD-POWERED!

For more facts, use Request Card at page 18 and circle No. 345

the New York State Thruway, contractors were bound to keep an existing avenue or adjacent ways open for traffic. For rock moving, the contractors used 15-ton rear-dumps, which were more than 8 feet wide and looked like dump trucks. They could not be used on ordinary public highways without special permit. Were they exempt from "motor vehicle" taxes, since they were used only in moving rock from one point to another within the 3-mile section under construction?

THE ANSWER: Yes. (Corbetta Construction Co. v. Bragalini, 167 N. Y. Supp. 2d 971, decided by the New York Supreme Court, Appellate Division, Third Department.)

The decisive factor was that even if such machines could legally travel a public highway under a special permit—not sought in this case—these machines were not so used.

Negligence not admitted

THE PROBLEM: *When the first blasts of rock excavation were set off for a sewer tunnel through a ledge, nearby houses were damaged. The home owners complained to the blasting superintendent, when the damage occurred, and he told them not to worry, that the contractor carried liability insurance. Could this statement be used to show negligence?*

THE ANSWER: No. The Maine Supreme Judicial Court said that the superintendent's statement could not be regarded as an implied admission that the work was being done negligently. (Albieson v. Robbins & White, Inc., 116 Atl. 2d 608.)

Comment: Foremen and superintendents should be cautioned against such remarks, because courts in some other states do not see eye to eye with the Maine court. For example, in a New Hampshire case (Herscensohn v. Weisman, 119 Atl. 705) the Supreme Court said that a passenger who sued a motorist for injury due to negligent driving had a right to show that, before the accident occurred, he had remonstrated against the negligent driving and the defendant had replied that plaintiff need not worry because defendant carried liability insurance. That, the court said, tended to show a reckless disposition.

For more facts on insert, circle No. 348.

Unlicensed supervisor of construction loses fee

THE PROBLEM: *A Virginia law forbids unlicensed persons to engage in general contracting or subcontracting. A "general contractor" or "subcontractor" is defined as "any person, firm, association, or corporation that for a fixed price, commission, fee, or percentage" bids to construct, or undertakes to construct or superintend the construction of any building, highway, etc., costing $20,000 or more.*

Plaintiff prepared building plans and specifications which defendant owners accepted on condition that the cost should not exceed $28,000 or $29,000. A written contract for plaintiff's superintendence of construction called for payments aggregating $23,000 to be made by the owners to plaintiff to cover itemized construction costs, the balance to be paid on completion. Plaintiff's compensation was to be 10 per cent of the construction cost. The general conditions of the specifications designated plaintiff as "general contractor" and those furnishing labor and materials as "subcontractors." The owners refused to pay plaintiff's bill for $3,593, and he sued. Was he entitled to collect?

THE ANSWER: No. (Bacigalupo v. Fleming, 102 S. E. 2d 321, decided by the Virginia Supreme Court of Appeals.)

The court said that the statute was enacted "to protect the public from inexperienced, unscrupulous, irresponsible, and incompetent persons." Right to compensation is denied an unlicensed contractor as a penalty for failing to secure a license. It was no excuse that plaintiff regarded himself as being a mere agent for the owners and subject to their direction. Whether one is a "contractor" within the meaning of the statute depends upon what he does and not what he calls himself.

Federal liability

THE PROBLEM: *An independent contractor was engaged by the federal government to make repairs on the Bonneville Dam on the Columbia River. This involved use of a tug on which employees of the contractor were working when turbulent waters caused the tug to sink and five employees drowned. Was the government liable in damages for loss of the lives?*

THE ANSWER: No. (Hess v. United States, 259 Fed. 2d 285, decided by the United States Court of Appeals, Ninth Circuit.)

The court said that responsibility for the accident, if any, must be that of the contractor, who had investigated the hazards involved and who would be liable if there was negligent disregard of those hazards.

"Nothing takes the gambling out of building like TORQMATIC DRIVE"

Little wonder so many contractors refuse to take chances on any other make automatic drive. They know how TORQMATIC's *proved* performance – in more than 10 years of tough, on-the-job use – really pays off.

In ankle-deep mud, for example, TORQMATIC equipment doesn't bog down, its wheels spinning. On tough grades, it keeps climbing where stick-shift haulers falter. And more nimble TORQMATIC earthmovers and dumps meet tighter schedules by handling more trips a day.

What's more, TORQMATIC rigs have exceptional staying power. They need no pampering—have amazingly few repair needs. It's one big reason for rock-bottom operating figures that make a TORQMATIC-handled job more profitable.

Reason enough, then, for making your next new equipment TORQMATIC equipment. It's *the hydraulic drive that's outproved all others.* And it's available in almost every make and model equipment you can use. See your dealer—or write:

Allison Division of General Motors, Indianapolis 6, Indiana
In Canada: GENERAL MOTORS DIESEL LIMITED, London, Ontario

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THE MODERN DRIVE FOR MODERN EQUIPMENT

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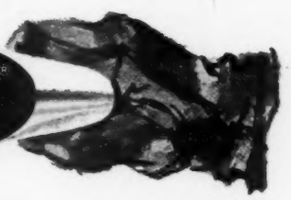
Ask the man who runs the rig...

no one makes a tougher tooth than ESCO

The construction industry looks to



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Electric Steel Foundry Co., PORTLAND, OREGON

See reverse for shapes and size range

Here are the points to remember..

12M ALLOY STEEL

ESCO 12M Points are the toughest you can buy. Developed through years of research for the construction industry, cast *ESCO* 12M is carefully heat treated to produce the finest steel made for the severe shock and abrasion encountered by points and adapters.

RIGID QUALITY CONTROL TESTS ASSURE TOUGHNESS, HARDNESS

Every *ESCO* Point is Brinell tested to assure the exact degree of shock-absorbing toughness and abrasion-resisting hardness for longer digging life. Be sure to look for the Brinell mark on every *ESCO* Point you buy.

8 POINT SHAPES

You can select from eight different shapes to find the point that matches your digging conditions. *ESCO* Points are designed by bucket and excavation specialists who know how to achieve top digging performance. The self sharpening design of an *ESCO* Point makes it start sharp and stay sharp.

ESCO Points and Adapters for all digging equipment

Your local ESCO dealer can supply Points and Adapters for all your digging needs. By using ESCO Points and Adapters on all your equipment you can cut costs further by reducing your point inventory and consolidating purchases. Call your ESCO dealer today for details. He's listed in the yellow pages of your telephone directory. Or, write direct.

ESCO Point shapes ... start sharp, stay sharp and last longer under any digging condition.

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MFG. PLANTS AT PORTLAND, ORE. AND DANVILLE, ILL.
Offices in Most Principal Cities
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Telephone conversations

THE PROBLEM: *Does a law that forbids courts to use evidence obtained by wire tapping protect telephone conversations against disclosure by one who has listened in on an extension line with the consent of the other party to the conversation?*

THE ANSWER: No. (Ladrey v. Commission of Licensure, 261 Fed. 2d 68, decided by the United States Court of Appeals, District of Columbia.)

The court said that everyone who answers a telephone call must contemplate the possibility that the caller is permitting a third person to listen in. As noted by the United States Supreme Court in another case, each party to a telephone conversation is bound to be aware that the other may have an extension line upon which he is directing or permitting another person to listen.

It follows that neither party to a telephone talk violates any legal right of the other if the conversation is recorded by a stenographer.

Indemnity against loss through own negligence

THE PROBLEM: *A contract to construct a 40-foot-high tank specified: "The contractor shall indemnify the owner against all claims, demands, liens, taxes, loss, or damages of any character suffered by the owner, and shall save the owner harmless from all liability growing out of or incurred in the prosecution of said work or arising from any operations, acts, or omissions of contractor.*

"Contractor shall comply with all the laws of the state and municipality where the work is to be performed and shall carry such contractor's liability and workmen's compensation insurance as is satisfactory to owner."

The contractors' employee was electrocuted while hooking a hoist line onto a bailer plate that was being lifted into position about 30 feet above ground. The hoist line, extended too far, contacted an uninsulated high-tension wire. The widow sued the owner and the electric power company. The owner filed a cross-complaint against the contractors, claiming right to reimbursement for $18,000 damages awarded against it in favor of the widow. Was the owner entitled to reimbursement?

THE ANSWER: Yes. (Fossen v. Ashland Oil & Refining Co., 309 S. W. 2d 176, decided by the Kentucky Court of Appeals.)

The court said that it was not necessary that the contract specify that the owner should be indemnified against its own negligence. (The negligence seems to have been regarded as consisting in contracting for erection of a tank which would bring workers close to the uninsulated wire.) The quoted clauses implied that the contractors would indemnify the owner against liability for such an accident. It was significant that the contract required the contractor to carry liability insurance "satisfactory to the owner."

Collisions on roads under construction

THE PROBLEM: *Base construction was completed and a road was open to traffic. At night the paving contractor's watering truck was moving along the left side of the road. Despite the truck's headlights, an approaching motorist did not realize that the truck was on the left-hand side of the road, and a collision occurred. Was the contractor liable on the ground that traffic should have been suitably warned that the road was subject to restricted travel?*

THE ANSWER: Yes. (Webb v. Brock, 98 So. 2d 139, decided by the Mississippi Supreme Court.)

The court said the state motor traffic law exempted the truck from its provisions concerning the movement of traffic. But the law did not relieve the contractor from the common-law obligation to use due care to avoid injury to motorists using a highway in conformity to the law and under reasonable belief that the road was unrestrictedly open to travel.

Contractor was liable for stream overflow

THE PROBLEM: *A contract called for reconstruction of a municipal bridge across a stream. Scaffolding and formwork so obstructed the stream that floating logs, stumps, and debris lodged in the work during a rain. This caused the stream to overflow and damage a nearby house and property. Did the evidence warrant an award of damages against the city and the contractor?*

THE ANSWER: Yes. (Corrington v. Kalicak, 319 S.W. 2d 888, decided by the St. Louis, Mo., Court of Appeals.)

The decisive fact in the case was that the scaffolding occupied the full length and depth of the bridge except for a 12 to 15-foot-diameter opening to let the water through. Evidence showed that the overflow was attributed to weather conditions that should have been foreseen, and not to any unusual flow of water.

The city's liability was based principally upon the fact that the work was subject to daily inspection by the city's engineers and employees, and that the scaffolding was not constructed according to prescribed specifications.

Runways at Chicago's O'Hare Field now converted to jet use by an overlay of CONCRETE

With concrete, the strength is in the concrete itself. It is not just a smoothing overlay. Loads can be computed *mathematically*. With the bearing values of the soil plus the old pavement at O'Hare, 11 inches of concrete did the job—a big savings. Because the flexible pavement had become channelized and rutted, a 3-inch granular leveling course was used to insure uniform concrete thickness.

Resurfacing with concrete turns old runways into new. . . brings them up to jet-age needs

At Chicago-O'Hare International Airport, they simply covered the flexible pavement with modern concrete. With the old pavement serving as a subbase, 11 inches of concrete gives the necessary strength to handle the heaviest jet wheel loads expected.

The *beam* strength of concrete makes such overlays possible. Concrete is the only paving material that can be precisely designed to match *future* loads. That's why concrete runways can be expected to last 50 years and longer. There won't be any waviness or channelization, even under 150-ton jet airliner weights. And concrete withstands the heat of jet blasts, and the action of spilled fuel, as no other pavement can.

Concrete is the high-safety pavement — pilots themselves will tell you this. It is light-colored for maximum visibility. Its grainy surface means dependable skid resistance and better braking. Concrete creates no dragging action on take-offs.

These material and engineering advantages that make modern concrete ideal for airports make it unexcelled too, for highways of every class. Mile after mile of concrete across the country proves it can do the job better—and do it for less money in the long run!

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

For more facts, use Request Card at page 18 and circle No. 348

Two cost-cutting and time-saving techniques for concrete paving are used by Koss Construction Co. on a 15½-mile section of U. S. 40 near Topeka, Kans. The first makes use of a cart for carrying reinforcing; the lead spreader tows the cart. The second, for setting steel tie bars to proper depth and spacing in the concrete, makes use of a disk carried by the spreader.

Spreader-mounted disk places transverse tie bars, cart simplifies handling of wire mesh to provide

More speed for a paving train

Methods

by BILL ALLEN, field editor

The men of Koss Construction Co., always looking for ways to improve the efficiency of their paving train, came up with a couple of good ideas that they put to use on a paving job near Topeka, Kans.

One was a new system for handling and placing wire mesh in the pavement. A special cart, pulled by the first spreader, carries the mesh. The cart rides along with the train, and it carries enough mesh to reinforce about 1,800 feet of pavement.

Only two men are needed to slide the mesh from the cart to the concrete. The conventional system of spreading the mesh along the shoulder and then pulling it in to the forms requires from 4 to 6 men.

The new system also eliminates the hazards of pulling the mesh across an area that is often swarming with batch trucks. According to Koss, it's a smoother, more compact operation all the way around.

Wheel places tie bars

Another of their cost-cutting ideas simplifies the placing of short transverse tie bars down the center of the pavement. By the conventional method, the bars are placed in chairs on the subgrade. Under the new system, the bars are placed in notches

The cart carrying the wire mesh consists of two 4-wheel bridges, tied together and to the spreader by steel rods. Two men grab two 12×21-foot mesh sections and set the ends in concrete while the cart rolls out from under the opposite ends. The top section of mesh is then flipped over onto the opposite half of the 24-foot roadway. The cart, loaded twice a day, holds enough mesh for 1,800 feet of pavement.

The disk used to place transverse tie bars was invented by superintendent John Beuerlein and is already used by several contractors in the area. A workman merely sets the bars in notches on the edge of the 3-disk wheel; the notches hold the bar until it is almost at the bottom of the wheel. The wheel turns as it is pulled through the mix.

on a 3-disk wheel mounted at the rear of the first spreader. As the wheel turns, it places the bars at exactly the right depth and spacing. The wheel, its bottom edge in about 2 inches of concrete, is turned by the forward motion of the spreader.

An extra man rides the spreader and places the bars in the empty notches at the top of the wheel. The hook-shaped notches hold the bars until each is at the bottom of the wheel.

Both the wheel and the mesh cart helped Koss slash costs on the $2.1 million paving contract on U. S. 40. The 15.6-mile contract adds a 24-foot roadway to the existing highway. The modern 4-lane divided highway will become a part of Interstate 70.

Lime stabilizes subgrade

Koss was not alone in trying something new on this long stretch of pavement. The Kansas State Highway Commission was trying lime stabilization for the subgrade. Although the commission had tried it successfully on two experimental projects, this was the first large contract to call for lime stabilization.

The existing pavement, which the new construction parallels, was supported only by a 4-inch granular base that was beginning to show signs of being inadequate. In places, the pavement was uneven and subject to the pumping action of heavy traffic.

The 9-inch reinforced-concrete pavement of the new road is supported by a 4-inch granular base resting on 6 inches of lime-stabilized base. The base, strengthened with the lime-treated soil, is expected to give the new pavement adequate support. As the behavior of the pavement is checked in the coming years, the old pavement without the stabilized base will serve as a good standard of comparison.

Mesh cart

John Beuerlein, the superintendent on the job, obtained excellent results with the new method of handling wire mesh. The mesh cart had to be loaded only twice a day. Before the work started in the morning, and again at noon, a boom truck transferred the 21×12-foot screens to the cart. The screens or mesh sections were stacked in two piles.

As a matter of convenience, the two workmen tending the cart took two screens at a time from one pile. They did not have to pull the screens from the cart; they merely held the ends of the screens while the cart moved ahead. After the two screens fell to the concrete, the top one was flipped over onto the adjoining half of the roadway.

Basically, the all-steel cart consists of two 4-wheel bridges separated by about a 6-foot gap. Steel rods join the bridges together and also tie the cart to the first spreader.

Well balanced paving train

The mesh cart added to the efficiency of the well balanced paving train. At the head of the train, two

(*Continued on next page*)

This Heltzel Flex-Plane finisher follows the transverse finisher in the lineup. Only two hand finishers are needed to work behind this rig. Paving production averaged about 3,300 feet daily, reached a record of 3,590 feet.

THESE CP TRACDRILS AND ROTARIES STAYED ON THE JOB 20 HOURS A DAY— 7 DAYS A WEEK—AT 50° BELOW

Straight through the worst of winter, CP Tracdrils and CP "Power Vane" Rotary Compressors served 'round the clock on one of the world's toughest construction projects. The CP Tracdrils sank 2¾" blast holes through permafrost and solid rock . . . and despite the rutted, frozen ground and the mud caused by quick thaws moved easily from hole to hole. CP Rotary compressors wearing "overcoats" in the form of portable shelter delivered hundreds of hours of dependable trouble-free service throughout the job. You too, can put any CP Compressor and any CP Tracdril to work under your toughest conditions and forget your thermometer and your clock. You know that all CP construction equipment is built to boost contractor profits. See your CP equipment distributor!

Top: CP-800 self-propelled, crawler-mounted Tracdrils working at night in temperatures to 50° Below. Portable shelters shown house the CP Rotary Compressors. **Below:** Three CP Model 600 "Power Vane" Rotary compressors, like this one, powered by a 6-71 Diesel engine, supplied air for drilling operations.

Chicago Pneumatic 8 East 44th Street, New York 17, N.Y.

ROTARY COMPRESSORS • TRACDRILS • SINKER DRILLS • PUMPS • IMPACT WRENCHES • VIBRATORS • TAMPERS • DIESEL ENGINES

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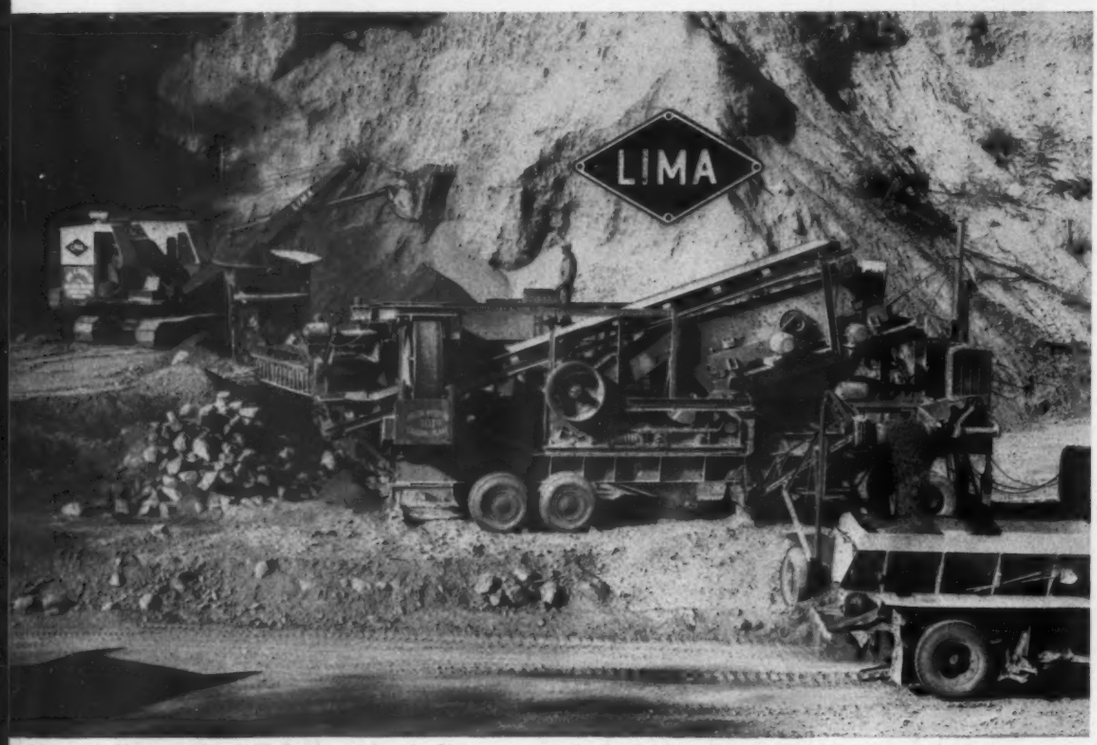
◄ In this plant, washed river sand is mixed with topsoil to provide granular subbase. At left, topsoil is fed to a hopper feeder above the conveyor belt leading to the Eagle Iron Works pugmill. Sand, right, also goes by the conveyor belt to the pugmill.

A drive-through batching setup supplied the pavers. The truck is leaving the Johnson double aggregate batcher—the last of three stops. A Manitowoc 3000 charges the bins. In the background is the Johnson cement plant. ►



Lima Austin-Western portable 101-SE Crushing and Screening Plant processes gravel and rock fed into its mechanical feeder in 1-cu.-yd. bites by Lima Type 44 Shovel. Accurately sized gravel travels conveyor direct to waiting State Highway truck at this Buchanan, Mich., site.

Crusher output averages 1000 cu. yd. daily— Lima Austin-Western 101-SE owner pleased

Roadbuilder John G. Yerington, of Benton Harbor, Mich., owns five Lima Austin-Western Crushing and Screening Plants. Of his portable 101-SE, shown above, Mr. Yerington says, "It is about 4 years old, but maintenance costs are extremely low. I'm well pleased with its ability to average over 1000 cu. yd. daily at a low cost per ton."

Superior performance

Thirty-one years ago, he bought his first Austin-Western equipment. Now he owns five Lima Austin-Western Crushing Plants and a Lima Type 44 Shovel. In addition, he has three graders, five rollers and a hydraulic crane—all Austin-Westerns. Obviously Mr. Yerington has learned from experience the superior capabilities of B-L-H equipment.

The rugged 101-SE is a completely portable, self-contained unit designed and built for rapid transport from job to job. High-speed production of construction materials at end-use sites reduces haulage time and costs. Diesel engine operates crushers and electric generator, which powers all other operations. Simplicity of transmission eliminates troublesome clutches, chains, sprockets and gearboxes . . . reduces maintenance, lowers tonnage costs. Only one man is required to operate the 101-SE by push button.

More tonnage for less

Lima Austin-Western Crushing and Screening Plants are engineered and quality built to produce a high volume of accurately sized gravel or rock over long years of trouble-free service. There is a portable or stationary Lima Austin-Western Crushing and Screening Plant exactly right for your needs. Learn how you can step up production and lower tonnage costs. See your nearest distributor or write us today!

Crawler-mounted Lima Type 44 Shovel empties its 1-cu.-yd. load into automatic feeder of Lima Austin-Western 101-SE Crushing and Screening Plant.

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LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO

5929

For more facts, use Request Card at page 18 and circle No. 350

(Continued from preceding page)

Koehring 34-E pavers, working on the inside and outside shoulders, placed the concrete in the forms. A Blaw-Knox paddle-type spreader leveled off the first 7 inches of concrete, while a similar spreader smoothed off the top 2 inches.

The second spreader was followed by a Jaeger-Lakewood transverse finisher. Then came a Heltzel Flex-Plane float finisher; a mechanical belt and burlap drag; and a bridge for laying burlap.

Specifications required that the wet burlap stay down for 24 hours. When it was removed, the pavement was mechanically sprayed with Hunt Process curing compound.

In the paving operation, the superintendent was particularly pleased with the performance of the Flex-Plane finisher. It planed off a smooth, even surface, and it required only two hand finishers working behind it.

Job production was good. The men averaged about 3,300 feet of 24-foot-wide pavement per day. Their record was 3,590 feet.

Lime gets good results

Base stabilization with lime was handled by two subcontractors: Soil-Crete Pavers, Inc., Oconomowoc, Wis., and Strickland Co., Tulsa, Okla. Mixing the lime with the clay and shale of the subgrade was a long, drawn-out process, but it produced good results. After the clay had been treated, it lost its slick and slippery quality and handled like good dirt. It com-

This was the first big contract in the state calling for lime stabilization of the subgrade. The first step, the spreading of about a 2-inch layer of Ash Grove lime on top of the grade, is handled with this spreader attached to a Ford dump truck.

◄ The loosened mixture of lime and clay is tilled by a Seaman-Andwall Trav-L-Plant. Blading and rolling follow. The roadbed is kept sealed for 48 hours to give the lime a chance to work.

The grading is handled by a Cat No. 12 grader and the sealing by a Rosco 9-wheel self-propelled roller. After the 48-hour sealing period, the road is scarified, wetted, pulverized, and rolled again to make the final 6 inches of subbase. ►

(Continued from preceding page)

pacted to a stone-hard surface that shed the water well.

Long, slow process

The first of many steps in the mixing process was to spread the lime on the grade. For this first operation, a lime spreader, attached to the rear of covered dump trucks, spread about a 2-inch layer of hydrated lime. This depth was calculated to add 5 per cent of lime by weight to the top 6 inches. Ash Grove Lime & Portland Cement Co., Kansas City, Mo., furnished the lime.

After the lime was spread, the ground was scarified with a Caterpillar No. 12 motor grader and wetted heavily with a forced-feed spraybar. Then a Seaman-Andwall Trav-L-Plant pulverized the chunky mixture. This process was followed by blading, and then the surface was rolled by a Rosco 9-wheel self-propelled roller. With the surface of the road sealed by the rolling, the material was left untouched for 48 hours. This gave the lime a chance to go to work chemically on the acid soil. Then the whole process was repeated once more. The ground was scarified, tilled, wetted, graded, and rolled. In the final rolling, an Essick vibratory roller assisted the pneumatic rig in getting the 95 per cent density.

The lime stabilization produced better results in clay than in particular shales. In the clay, for example, a typical PI of 27 was reduced to 9. In the shale, a PI of 29 was reduced to only 19. Other shales proved to react better; a typical PI of 25, for example, was reduced to 7. A most plastic soil with a PI of 37 was reduced to a PI of 13. While lime stabilization was reducing plasticity, it also reduced swell. Undisturbed samples cut from the lime-treated base were placed in brass swell molds. These were loaded with normal surcharge weight, and water was introduced through perforated bases. The percentage of swell attributable to volume change at the end of 100 hours was extremely low, varying from 0.1 to 0.8 per cent.

Personnel

For the Kansas State Highway Commission, the acting resident engineer, Herbert C. Nunemaker, replaced R. E. Elliott, who was in the hospital. General manager for Koss Construction Co. was John Beuerlein. Rankin Austin was superintendent of the paving train. THE END

Four of Merritt-Chapman & Scott's seven 6-yd. Lima Type 2400 Shovels are shown working on the excavation site of the Niagara Power Project's main generating plant at Lewiston, N. Y.

Four contractors use 17 Limas on giant Niagara Power Project

Wherever there is a really tough job to be done—when high production, dependable heavy-duty service, rugged power, and low operating cost are essential—you are almost certain to find powerful Limas chosen for the task.

The $720,000,000 Niagara Power Project is a big job—one of the biggest. Four of the project's contractors are using a total of 17 high-output Limas on their jobs! The duty roster includes 11 big 2400's which can be used interchangeably as 6-yd. shovels, variable capacity draglines and cranes; one Type 802 50-ton crane; two 4-yd. Type 1601 shovels; one Type 1201 which can be used as a 3½-yd. shovel or 70-ton crane; and two 35-ton 54-T truck cranes.

Around the world, profit-minded contractors know from experience that it pays to buy Limas. They are quality-built throughout to deliver high production at low operating and maintenance costs.

Quality Lima Features

Here are a few examples of the superior features found in the Lima Type 2400—extra strong and rigid rotating base supported by oversize conical rollers in conjunction with double flanged heat-treated roller path and separate hook rollers; horizontal gear train and swing bevel gears are pump-lubricated in oil-tight case; anti-friction bearings are used throughout. Induction hardening of all wearing parts increases life. Crawler bushings are equipped with piston-ring type oil seals. Torque converter adjusts load speed to correspond with the resistance to moving the load—no engine stall.

Limas For Every Job

Profit with Limas—there is a type and size for every job—½ to 6-cu. yd. shovels, cranes to 110 tons crawler-mounted, 70 tons on rubber, variable capacity draglines. Investigate now! Contact your nearby Lima distributor or write us for full details.

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Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

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A one-man-operated aluminum erection cart is in position on the roof of a 12-story office building in Kansas City, Mo., to raise and lower an aluminum basket carrying men working on the mullions, and to set panels. Load and basket lines drop from the two boomlike extensions at the top. The rig rolls along the edge of the roof on wheels.

Special methods spee

Skilled crews working with special equipment set a fast pace in erecting the curtain wall for a 12-story office building in Kansas City, Mo.

An ingenious erection cart speeded the work. The aluminum-framed rig worked from the edge of the roof. It handled cables for setting the panels, as well as an aluminum basket for carrying men.

Since the lightweight rig was mounted on wheels, it was easily pushed into position. Two small electric motors, working through a gear box, supplied power to the two winches that controlled the load lines and basket lines. The men working in the basket controlled their position by means of a switch mounted on the basket.

With the help of this special equipment, a crew of five men installed about 2,500 square feet of the 26-foot-high panels in a day. The tall aluminum-framed panels were assembled in the building by a crew of three.

First curtain wall for city

The office building, located at 811 Main St., is the first major building in Kansas City to be wrapped in a curtain wall. Built by the Downtown Redevelopment Corp., and now occupied by American Telephone & Telegraph Co., the building has sleek aluminum and glass walls rising up from an area that was once a jumble of obsolete buildings. The project is a part of the city's plan to redevelop slum sections of the downtown area.

Designed by Keene & Simpson & Murphy, Kansas City, the 12-story modern building has a parking garage, occupying the lower five floors, for office workers and the public. The floors, beams, and columns are of reinforced concrete.

Winn-Senter Construction Co.,

The aluminum basket that hangs from the erection cart on the roof can be raised and lowered by the men working on the mullions. A button on the handrail controls the movement of the basket.

LIMA Roadpacker speeds highway and airport construction across the nation

The LIMA Roadpacker is a big favorite with prominent contractors throughout the country for highway and airport construction. It has no equal for fast, uniform consolidation by the vibratory method of single course macadam bases, gravel subbases and soil-cement bases.

The Roadpacker is equipped with six 420-lb. hydraulically driven shoes for effective vibrating and tamping action. These oscillate approximately ¼ in. at the proper frequency for best consolidation of any base material. The force is applied vertically to prevent shoving the material being consolidated. The sole plate is designed for both forward and backward operation.

Working widths—easily varied by upfolding one or both of the end shoes—range from 8 ft., 9 in., with four shoes, to 13 ft., 1 in., with six shoes. The shoes are raised and lowered hydraulically.

Get the full story on the LIMA Roadpacker today. See your nearby distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

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tain-wall erection

Methods

Panels are assembled from individual pieces. A crew of three, working with Black & Decker screw guns, takes about 25 minutes to assemble a panel. No glass is put in at this time.

Kansas City, Mo., held the $5 million general contract for the construction of the building. Working under a subcontract, Gall Reversible Windows, Bedford, Ohio, supplied the curtain wall and was responsible for its construction. The erection of the glass-and-aluminum wall was done by Mid States Ornamental Iron Co. of Kansas City.

Reversible windows

The wall is made up of 6-foot-high white-enameled panels alternated with 6-foot-high glass windows. The windows, which are a special feature of the wall, can be rotated so that the outside faces can be cleaned from inside.

To give a pleasant pattern of vertical lines, the width of the aluminum mullions is varied in a sequence of one narrow followed by two wide. The narrow mullions are 3½ inches, and the wide ones are 8 inches.

Watertight wall

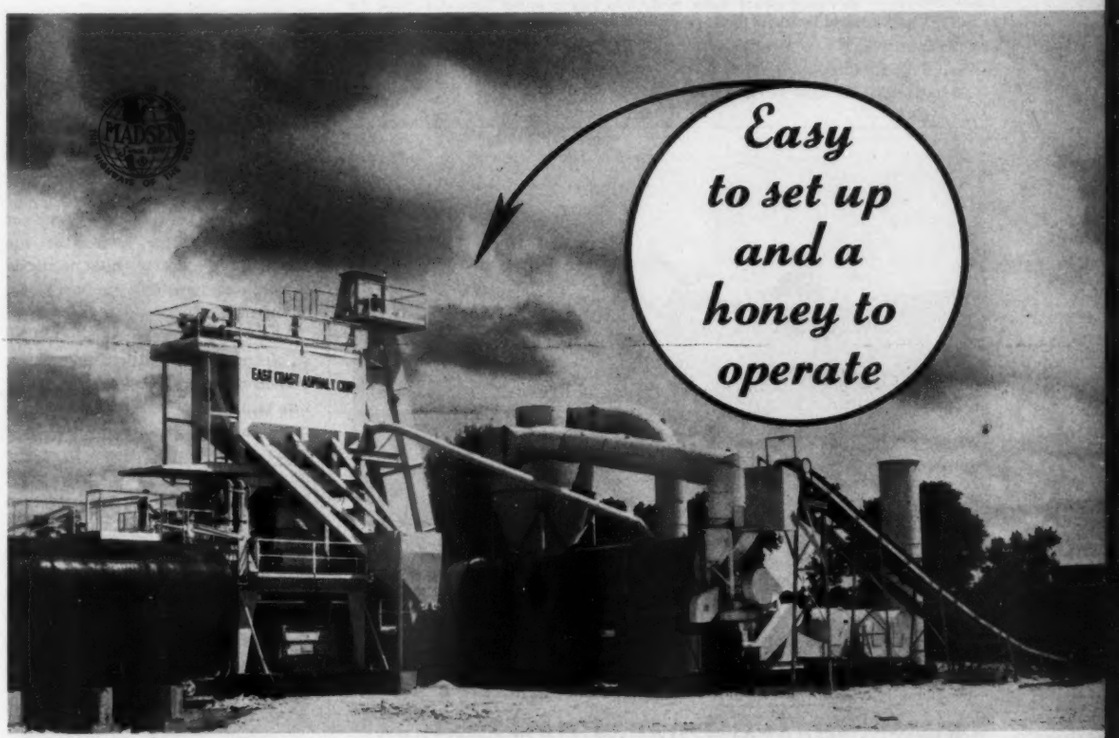
All connections and joints are gasketed with neoprene, making the wall watertight and airtight. In fact, the design permits the wall to bend with high winds and still stay tight. This type of wall has been tested successfully under static pressures of 30 pounds per square foot, and also under water-bearing winds of 120 mph. The cost of the wall on this building was about $6 per square foot, installed.

Aluminum erection cart

In installing the panels, special rigs made by Gall Reversible Windows helped cut the costs of erection. The erection cart, which set the panels, was a lightweight and compact unit. Disassembled into its component parts, it was easily carried to the rooftop. Its frame was built of aluminum box members, welded together. Two arms, projecting from the top of the frame, served as a double boom for carrying two load lines to the panel and two load lines to the basket.

(*Continued on next page*)

Rather than move the erection cart to this far corner of the building to install a couple of panels, the crew uses a simple boom and hand winch to place the 26-foot-long panels. Cost of the wall: $6 per square foot.



We like the portability and quick-erection features... the fast-mixing action and the clean operation of our Madsen Asphalt Plant — *says Gene Ballard, Vice President, East Coast Asphalt Corporation, Fort Lauderdale, Florida*

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ASPHALT PLANTS

Built in sizes of 1000-lbs. to 6000-lbs. batch capacity

•

The big MADSEN 5000-lb. Model 481 batch capacity asphalt plant shown above is owned and operated by East Coast Asphalt Corporation of Fort Lauderdale, Florida. It has a 50-ton 4-compartment hot bin, and 84" x 36' Madsen Dryer, a Madsen 12' diam. Cyclone Dust Collector and a Madsen Triple Wet Tube Dust Washer.

This plant is capable of producing up to 200 T.P.H. on a 45 second charge-mix-discharge cycle.

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Owners of MADSEN Asphalt Plants may not agree on which MADSEN feature is most outstanding, but, they all agree that MADSEN gives them the right combination of advanced engineering features for a more profitable asphalt plant operation. The MADSEN Model 481 Asphalt Plant, for example, offers more than 25 big features and advantages that increase production, reduce maintenance, and save countless dollars in plant operation.

Some of these features are shown below. See your MADSEN Distributor for the complete story.

FEWER SEPARATE PARTS MEAN FASTER ERECTION—
Complete box-like unit sections are built for transport on the highways. All major components may be wheel-equipped at the factory or in the field.

FAST, PRECISION TIMING AND WEIGHING

MADSEN Twin-Shaft PUG MILL MIXERS—
Combined with Madsen Asphalt Pressure Injection System (Patented) to provide the fastest and most thorough mixing action known to the industry.

ROLL-AWAY WEIGH-BOX—
Exposes mixer for fast, easy servicing of mixer tips and shanks.

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Madsen Asphalt Plants meet air pollution requirements everywhere. Tests prove Madsen Triple Wet Tube Dust Washers are 99.7% efficient!

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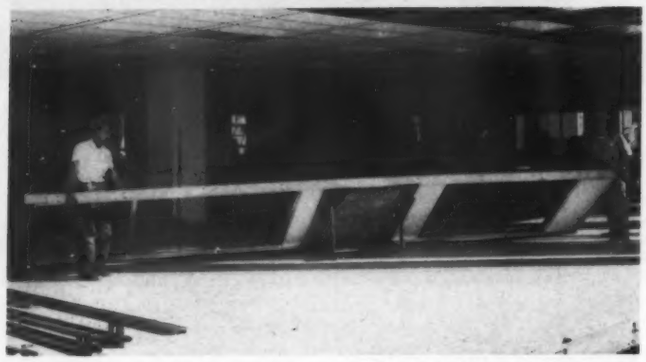


A completed end panel, rolled to the edge of the floor on this special cart, will be picked up by two load lines from the erection cart on the roof. Bolts, fitted into inserts in the floor slab, hold the steel brackets that are secured to the panels.

Gall reversible windows, also assembled in the building, are wheeled to the installation point on this cart.

(Continued from preceding page)

The lines to the panel and to the basket were operated separately by two winches. The winches were powered by two General Electric 2-hp motors that worked through a 30:1 reduction gear box.

Normally, the basket was not needed during the setting of the panels. The basket was used primarily to hold men installing the face plates of the mullions.

The men's lives were protected by an electric brake on the winch motor. (When the power was off, the brake was on.) As an added precaution, a line ran from a worker's belt to a heavy rope hanging down from the roof of the building. If the basket had fallen, the man would have been held by the rope.

The 2-story panels, which are 4.5 to 5 feet wide, were secured to the floors of the building by means of steel plates. The plates were bolted to steel inserts that had been cast into the outside edge of the concrete floor.

Panels assembled in building

In a work area on the eighth floor, the panels were put together from their component parts. Using Black & Decker drills and screw guns, a crew of three assembled a panel in about 25 minutes.

On some jobs, the panels are shipped as a unit to the building. On this job, the cost of freighting made it more economical to ship the component parts.

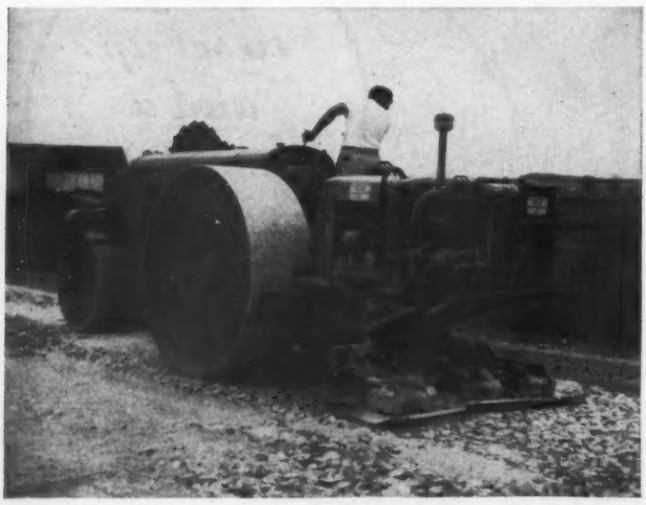
The glass and frame of the reversible windows were also assembled in the building. Two crews of two men were kept busy putting the windows together and setting them in the installed panels. L-O-F gray glass was used on the sunny sides of the building.

Personnel

David Montfort superintended the job for Winn-Senter Construction Co. A. L. "Red" Gavitt, of Mid States Ornamental Iron Co., supervised the erection of the curtain wall. THE END

Pa. highway news

Frank X. Burke, Jr., has been appointed acting equipment engineer in charge of the equipment bureau of the Pennsylvania Department of Highways, in Harrisburg. Burke replaces Clyde L. Zimmerman, who resigned.



Austin-Western Roller-Compactor combines static and vibratory force to work fines into stone base aggregates.

Austin-Western Roller-Compactors let you lay fewer courses—cut costs!

Austin-Western Roller Compactors do a deeper, faster consolidating job. They combine the advantages of both vibratory and static compaction, assuring maximum density of all types of material and profitable operation.

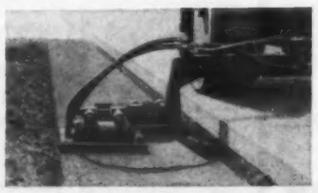
Vibrates up, rolls down

For vibratory compaction, three 450-lb. shoes are attached to a basic 3-wheel roller. Each shoe, hydraulically operated, vibrates approximately 2200 times per minute. This motion extends to the bottom of the lift and then reacts upward, thereby keying low-level material for maximum consolidation in the fewest number of passes. At the same time, the roller unit applies static pressure so as to effectively seal the surface.

There is more profit to be made with an Austin-Western Roller-Compactor. It operates at speeds up to 1 mph. Fewer passes are required because of its efficient double action. Fewer courses are required. It compacts lifts of stabilized material up to 12 in. in successive passes . . . no more need to remove previous courses if final tests reveal insufficient density.

Designed for rugged service

Maintenance requirements are low. Vibratory units are sealed in oil, completely protected from dirt . . . designed for dependability under rugged service conditions. Available now for Austin-Western and most all other makes of 3-wheel rollers. Get full information today on the cost cutting Austin-Western Roller-Compactor. See your nearby A-W distributor or write to us.



Vibratory widener attachment—for use with any 3-wheel roller equipped with A-W Roller-Compactor unit . . . may be mounted left or right.

Austin Western — 100th YEAR — CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

For more facts, use Request Card at page 18 and circle No. 354

• Because they're designed and engineered for specific tasks, you'll find MADESCO blocks, with heavy steel shells and fittings, your *safest* choice. In materials and in construction too, MADESCO tackle blocks assure the extra service that comes from over thirty years of specialized experience and "know-how."

MADESCO sheaves (of iron or steel) are correctly grooved to prolong rope-life. Loads travel smoothly, easily, quickly to save lifting time; savings too come from minimized maintenance and down-time.

• There's a complete line of MADESCO tackle blocks for every need. Consult your distributor or write for our engineering recommendations.

MADESCO TACKLE BLOCK CO.
Main Office, Easton, Pa.

MADESCO BLOCKS

HAE—MAD 821/230

For more facts, circle No. 355

The beam for this screed was notched at the ends to clear the metal termite guard around the outside of the slab. No screed supports were necessary since the screed rollers rode on the concrete side walls.

Case history

Vibrating screed speeds house floor-slab work

The Major Building Co., of Ansonia, Conn., believed that a vibrating screed would speed up the job of putting in concrete slabs for house floors on prefab housing projects.

In planning the job, the slabs were designed to be 24 feet 8 inches wide, so that the same screed could be used on all of them, but of different lengths: 36 feet 8 inches, 40 feet, and 44 feet 8 inches.

The Stow Mfg. Co. furnished a Model JS 24 feet 8 inches long.

The 4-inch-slump concrete, which had 9 gallons of retarder in each truck load, was placed 4 inches thick. It was then raked ahead of the screed by two men to the approximate height of the screed. The Stow screed was then pulled across the slab, vibrating and striking it off at the same time. Two passes were made for each slab.

In a slab 24 feet 8 inches by 36 feet 8 inches, 12 yards of concrete was used, and the slab was screeded in one hour.

The company estimated it saved 16 man-hours per slab with this method. In addition, because the slab was accurately held to grade with the Stow screed, there was an additional saving in time in setting up room partitions.

For further information write to the Stow Mfg. Co., Dept. C&E, 443 State St., Binghamton, N. Y., or use the card at page 18. Circle No. 73.

an EYE OPENER for the CONSTRUCTION INDUSTRY

the automatic HEAVY DUTY remote controlled hoisTower ®

INTRODUCING THE ONLY HEAVY DUTY, REMOTE CONTROLLED, PUSH BUTTON AUTOMATIC HOISTING MACHINE IN THE WORLD

Powered by a 25 hp Engine, this Hoistower generates the electricity which activates and controls it, independent of any outside source of electric power.

By simply setting the "Floor Selector" for any floor and pressing a button, the Hoistower will raise and return endlessly and accurately.

IN ADDITION

Every push button station has a "STOP LOCK" switch, which allows the workman to hold the platform at his work level. NO ONE can pull the platform away from him, until he releases the "STOP LOCK" switch. This new Automatic Hoistower is self-erecting to a working height of 45 ft.— will raise loads of 2500 lbs. at 160 FPM to heights of 150 ft. and more. The Hoistower can be towed to the jobsite with a pick-up truck — then placed and erected by one man in minutes.

The new Automatic is capable of using all standard accessories . . . BUCK Floor Hoppers, Concrete Buckets, Poop Decks, Chicago Booms.

FOR FURTHER INFORMATION . . . CONTACT

BUCK EQUIPMENT CORPORATION
720-D Anderson Ferry Road
Cincinnati 38, Ohio

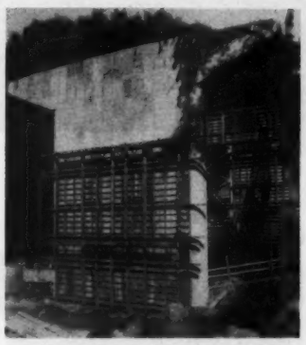
For more facts, circle No. 356

Case history

Save money on bridge job with prefab forms

A highly successful system of forming was used recently by the Conn Welding Co., New Castle, Pa., in building the bridge piers and abutments for the Dewey Avenue Bridge in Youngstown, Ohio.

Uni-Form panels were bolted together on the ground in 16×28-foot units, then lifted and placed by crane. Two-inch architectural channels between the panels were punched to receive conventional ½-inch threaded tie rods and stud rods. All alignment lumber was placed before lifting. Even scaffold brackets remained in place from one move to another. Concrete was placed in 16-foot lifts, with the top and wing walls being placed the third day after each pier began. In all, about 5,200 square feet of Uni-Form panels and channels was used.



The Uni-Form panels, after being bolted together on the ground in 16×28-foot units, were lifted and placed by crane.

One of the real problems on this job was the method of supporting the overhanging wing walls. In collaboration with Universal Form Clamp Co. engineers, Conn designed and built a truss that simply bolted to the panels and more than adequately supported the load. The truss and nose form was so designed that sections could be simply removed to accommodate varying pier heights.

For further information write to the Universal Form Clamp Co., Dept. C&E, 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 82.

Operator demonstrates hydraulically controlled side-shifting action of blade on 6-wheel Austin-Western power grader.

All-purpose Austin-Western graders speed highway project... shorten job by 2 months

"We completed a 3-mile dual highway project 2 months ahead of schedule with the help of our three Austin-Western graders," says Charles Solomon of S. D. Solomon & Sons, Pontiac, Mich.

Versatile A-W's unsurpassed

He tells us, "The A-W's are versatile machines. They can do many more kinds of work than any other single grader sold. They're unsurpassed for jobs in sand or tight corners. They do rough or finish grading, sloping and ditching equally well. We have three Austin-Westerns—a 4-wheeler and two tandems. Maintenance on these machines has been very low.

"As far as I'm concerned, Austin-Westerns are the best graders sold. They far outperform any other grader made."

Austin-Westerns feature exclusive all-wheel drive and steer on both 4 and 6-wheel models. You move more dirt farther and faster with an A-W because of power up front. No dead weight front end to push around.

All-wheel steering permits you to steer the rear to compensate for powerful side-thrust of a fully loaded blade. You can use the full 13-ft. moldboard and still grade ahead in a straight line. Front and rear steer provide amazing maneuverability for short radius work. An A-W can work in close quarters where other graders cannot.

Built to outperform

Austin-Westerns are quality built to outperform! Maintenance requirements are low. Distributor service is excellent. Choice of gas or diesel power. Torque converter optional. Hydraulic controls reduce operator fatigue . . . increase his efficiency.

Learn how Austin-Western graders can speed your jobs to give you added profit! See your nearby A-W distributor or write us today.

Rear steering permits operator to offset machine for extra blade reach in this finish grading operation.

Austin 1859 AUSTIN-WESTERN 1959 100th YEAR PARTNERS IN PROGRESS Western
CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.

BALDWIN · LIMA · HAMILTON

Power graders • Motor sweepers • Road rollers • Hydraulic cranes

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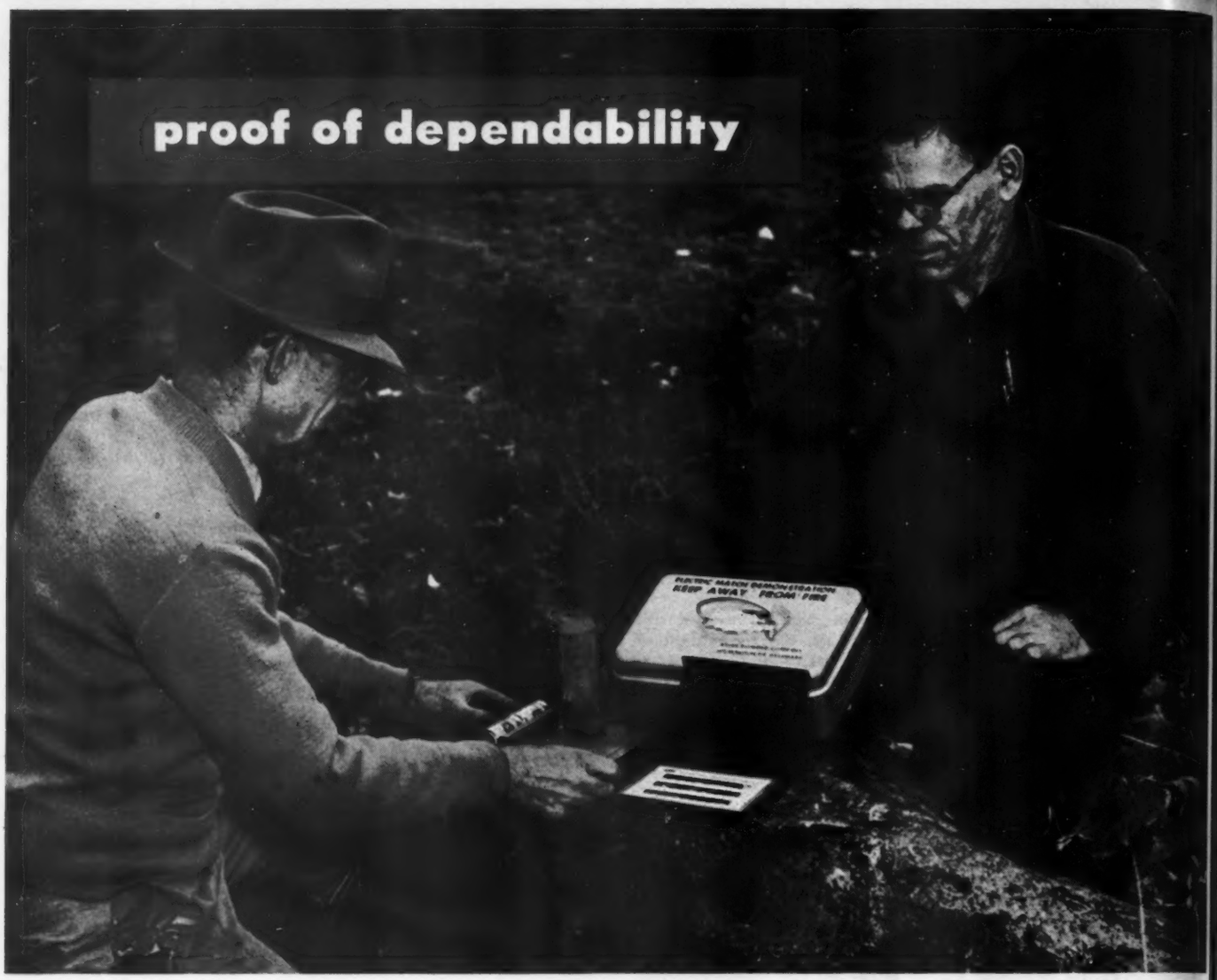


See this Demonstration!

Your Atlas Representative Can Show You Actual Performance of Unique Electric Match Contained Only in Atlas E.B. Caps

All Atlas Electric Blasting Caps are fired with tiny electric matches so dependable that the armed services use thousands of them in missiles and rockets.

You can prove for yourself how sure-fire Atlas caps really are. Your Atlas representative has an interesting test firing kit to show you. Pick a match at random from his stock and fire it yourself . . . see how it can be depended on to fire in your blast hole.

Your Atlas man can show you *why*, too. Every part of every Atlas match is pre-tested, and the match is completed by multiple dips in high quality flash compounds.

Your Atlas representative will be glad to show you this demonstration and to help you use Rockmaster and regular Atlas E.B. Caps for dependable initiation and timing to get effective, economical blasting.

EXPLOSIVES DIVISION
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
Offices in principal cities

Write for your copy of the new 60-page Handbook of Electric Blasting by D. M. McFarland and Guy F. Rolland.

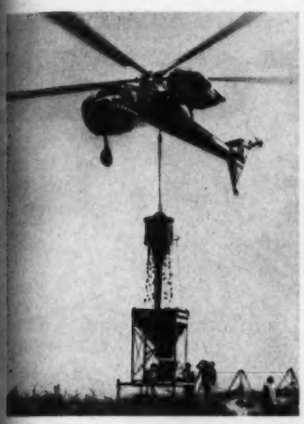
For more facts, use Request Card at page 18 and circle No. 358

Case history

Powerful new helicopter performs as "flying crane"

The Sikorsky Model S-60 "flying crane" helicopter, recently unveiled at the firm's Stratford, Conn., plant, demonstrated its ability to lift, carry, and place a 4,000-pound 50-foot utility pole in a predug hole, and to transport a 4,500-pound 60-foot-long Army bridge span and position it on a foundation.

The S-60 is powered by two Pratt & Whitney Model R-2800 piston engines of 2,100 horsepower each and can carry a 4 to 6-ton payload for distances up to 100 miles. The crane can be converted to gas-turbine power, increasing its payload by an additional two and a half tons. Other crane models under design will have capacities from 5 to 50 tons.



Instead of the conventional passenger or cargo cabin, the fuselage consists of a bridgelike boom extending from the cockpit to the tail rotor. Loads are carried externally by a hydraulically operated hoist suspended from the structure at a point directly under the main rotor. Also designed are detachable "pods" that can be picked up or deposited quickly.

With this unit, states the manufacturer, the contractor can quickly and easily transport trucks, bulldozers, and other equipment to isolated locations. The crane will lend itself readily to towing or pulling trucks, bulldozers, and other heavy equipment out of mired ground.

The detachable pods could carry supplies, repair parts, or workmen; could be outfitted as contractor shops, field-office headquarters, soil-testing laboratories, or mobile repair shops; or could house construction crews.

These pods could also be designed to carry liquids or semisolids such as paving asphalt, fuel oil, or drinking water. Littleford Bros., Inc., Cincinnati manufacturers of truck and trailer-mounted supply tanks used to transport asphalt, say that such an idea is practical: the tank can be designed to fit into position on a truck or trailer chassis at both ends of the trip. This bulk haulage tank can eliminate the time-consuming operation of transporting drums of asphalt and then heating them to remove the asphalt, by equipping the flying supply tank with heating tubes to bring the asphalt up to its required temperature at destination.

Soiltest, Inc., Chicago manufacturer of portable truck and trailer-mounted soil-testing laboratories, believes the idea of a flying laboratory to be entirely possible. In fact, the laboratory body could be transported by the S-60, complete with the truck or trailer to which the laboratory is attached, for over-the-road travel after arrival at its destination.

For further information write to Sikorsky Aircraft, Dept. C&E, Stratford, Conn., or use the Request Card at page 18. Circle No. 84.

The Travelers Insurance Companies' studies show that exceeding the speed limit caused 12,770 deaths and 980,000 injuries on the nation's highways during 1958.

Book on estimating building construction

A second, revised edition of "Building Construction Estimating," by George H. Cooper, discusses all phases of contracting for estimator, builder, architect, contractor, building inspector, insurance appraiser, and real-estate broker.

New material in the book includes a section on building plans and enlarged coverage of contracts. The mechanical-trades section contains separate chapters on plumbing, heating, and air conditioning. The general duties and relationships of the estimator are covered. Also discussed are various stages of construction: excavating, concrete foundations, concrete floors and roofs, cement work, and steel and iron. Appendixes include specimen estimate sheets, a glossary of construction terms, and reference data. Diagrams supplement the text.

Priced at $7.50, the book may be purchased from the publisher, McGraw-Hill Book Co., Inc., 330 W. 42nd St., New York 36, N. Y.

Daniel Construction news

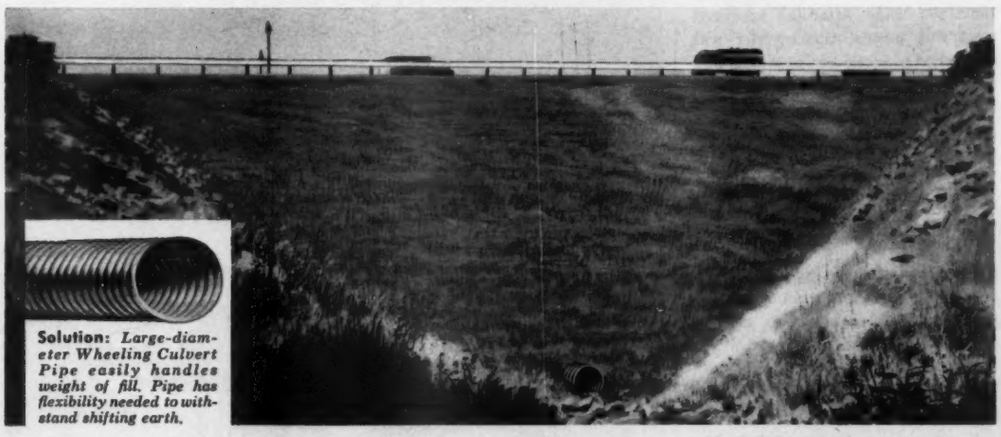
George McDougall has been named chief engineer of the Greenville Division, Daniel Construction Co., Greenville, S. C. He was formerly project manager for the company. McDougall began his career as a bridge designer on the Alcan Highway and later became chief bridge engineer for the highway.

Wheeling

METAL CULVERT PIPE BY WHEELING

Problem: *How to drain this deep draw without using costly bridge. Difficulty is increased because of shifting earth.*

Have to drain deep, shifting fills?



Solution: *Large-diameter Wheeling Culvert Pipe easily handles weight of fill. Pipe has flexibility needed to withstand shifting earth.*

Use this flexible metal culvert pipe!

Wheeling Pipe Arch—a wide, comparatively flat-bottom type of corrugated metal pipe for use where headroom is limited.

Small-diameter Wheeling Metal Pipe—ideal for farm and home drainage requirements.

Although ordinary heavy, rigid pipe *looks* stronger, it often cracks and breaks under deep or shifting fill. *But not Wheeling Corrugated Metal Culvert Pipe!*

Flexible Wheeling Pipe adjusts to changing pressures. Amazingly strong because it uses the surrounding earth to help carry the load.

Wheeling Metal Culvert Pipe or Pipe Arch comes in copper-bearing steel or copper-bearing pure iron, plain galvanized or bituminous coated (with or without paved invert). Available in a wide range of gauges and diameters.

Ask your nearby Wheeling culvert plant, warehouse or sales office for full details. Wheeling Corrugating Company, Wheeling, West Virginia.

WHEELING CORRUGATING COMPANY · IT'S WHEELING STEEL!

Immediate delivery on all stocked items from these warehouses: *Boston, Buffalo, Chicago, Columbus, Detroit, Kansas City, Louisville, Madison, Minneapolis, New Orleans, New York, Philadelphia, Richmond, St. Louis.* Sales Offices: *Atlanta, Houston*

For more facts, use Request Card at page 18 and circle No. 359

Balanced-weight erectio

Balanced-weight construction of the 420-foot western anchor span of the 3-span continuous-truss Hudson River Bridge in New York State allows guy derricks to work in both directions. Only two falsework bents were required for the superstructure job—one on each side of the river. The traveler at the end of the approach span will dismantle the guy derrick.

By using the balanced-weight method of bridge erection, Harris Structural Steel Co., New York, N. Y., put up a 1,440-foot-long, 3-span continuous truss across the Hudson River in New York State with the help of only two falsework bents. This main truss, together with a 975-foot west approach and a 2,725-foot east approach, is known as the Hudson River Bridge.

Spanning the river between Selkirk and Castleton, N. Y., the bridge forms an important link in the new 24-mile-long Berkshire section of the New York Thruway system. Eventually, it will provide a direct connection between the Massachusetts Turnpike and the Thruway.

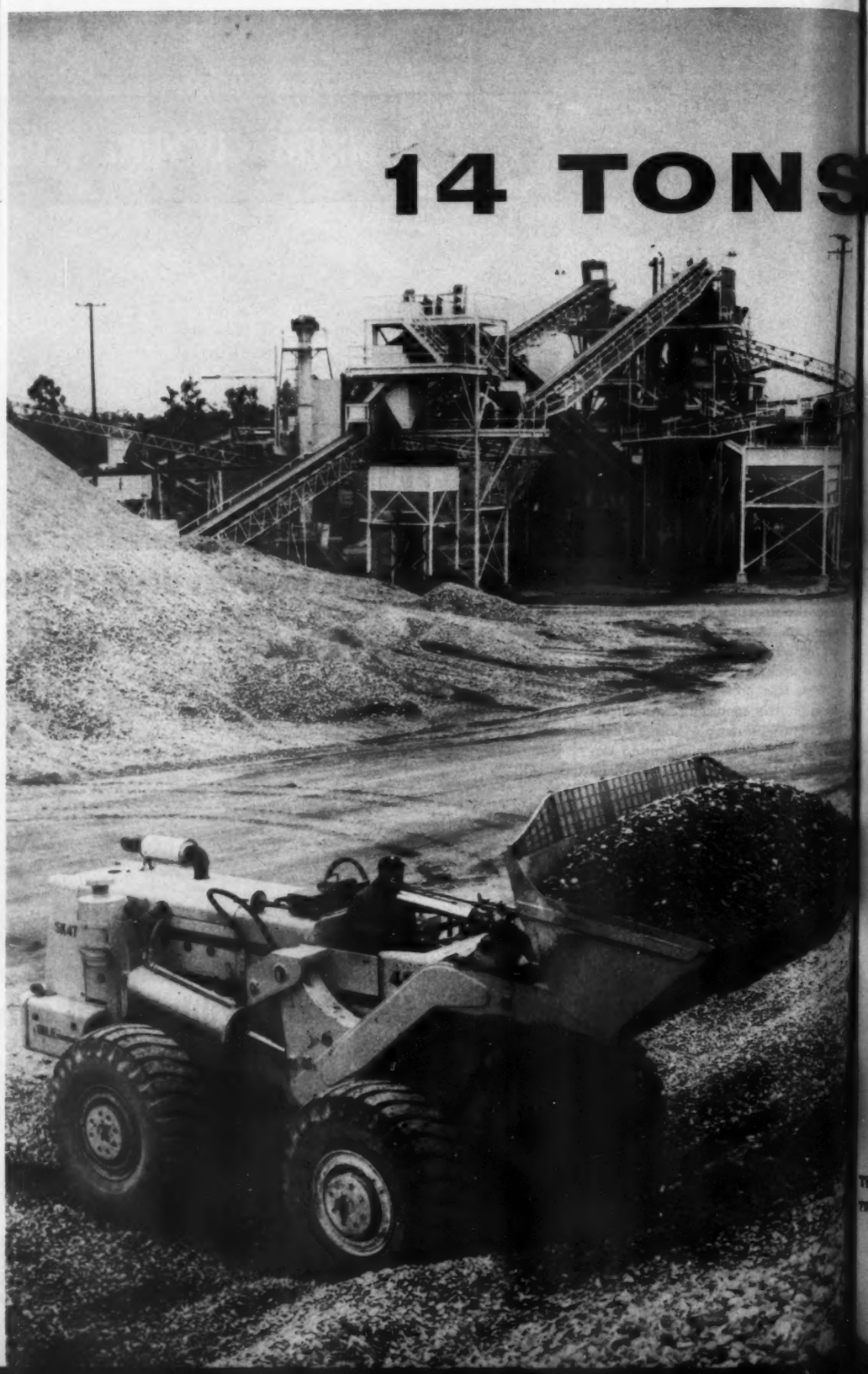
Truss erection

The 3-span truss consists of a 600-foot center span and 420-foot anchor spans on each side. Each of the spans is supported by 121-foot-tall column piers that have two 13½-foot-diameter columns on 72-foot centers.

Before work on the truss spans began, Harris erected the steel for the approach spans—first the 30 east approach spans and then the 10 west spans—with a 30-ton traveler, powered by an American 180 hoist, and a Lima 802 crane. After the approach steel was placed, the traveler was positioned over the last approach pier to help dismantle one of the guy derricks used to erect the west 420-foot anchor span of the truss. Steel for the approach spans, shipped by New York Central railroad, was unloaded at the site by a P&H 575 crane and trucked to the bridge.

The contractor started work on the truss steel on the west side of the river by erecting a falsework bent 120 feet west of the main-span column pier. The falsework bent, as well as the 121-foot column pier, was built on shore; the opposite main column pier and falsework bent required floating rigs, since they are located in the river.

Harris Structural, which is also fabricating the 10,000 tons of steel for the $8,600,000 superstructure job, had to drive sixteen 14-inch H-beams for the pair of columns making up the falsework bent. This was handled by a McKiernan-Terry S-5 hammer mounted on a Lima 1001 crane. The beams were driven to rock some 35 to 40 feet below the surface. Each cluster was topped with a steel grillage consisting of steel-channel and I-beam sections. Two 30 WF 190 beams, 121 feet long, were laced together to form



ction minimizes need for falsework

Methods

ree derricks erect 10,000 tons of steel for bridge link tween the New York Thruway and Massachusetts Turnpike

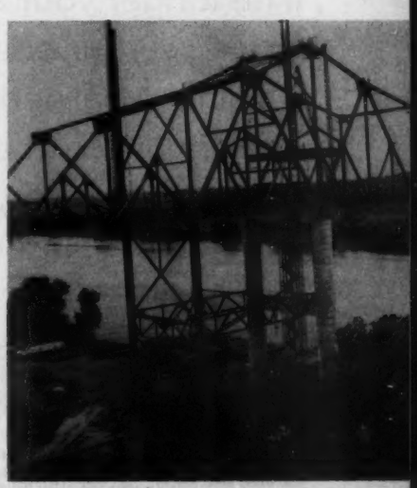
The falsework bent consists of a pair of columns, each made up with two laced 30 WF 190 sections 121 feet long. These columns are supported on steel grillages on pile foundations. Sixteen 14-inch H-piles were required under each grillage.

each of the bent columns. The columns in turn were tied together with cross bracing and a truss to complete the 75-foot-wide bent.

Three derricks used

Two 30-ton 120-foot-long steel trusses were then erected between, and supported by, the column pier and falsework bent. In order for these trusses to support a derrick, they had to be transversely braced with the actual steel floor beams of the bridge. Derrick A, having a 110-foot boom and a 120-foot mast, and with a 43-ton capacity, was set on this platform to erect the bottom chord and floor beams of the bridge between the bent and column pier. Enough room was left during this erection so that derrick A could be jumped up to the bridge floor beams.

Derrick A was then used to erect derrick B, another 43-ton-capacity rig, on a temporary steel platform erected between the truss steel over the column pier. After erecting some of the truss steel east of the column pier, derrick A erected a smaller 30-ton derrick C on the temporary plat-



The falsework bent is tied to the column pier by two trusses. Then the bridge floor beams were positioned between the trusses so that the first guy derrick could be placed. The derrick was jumped up to the bridge after the rig had erected the bottom chord, where the floor beams were used.

SPER MINUTE!

TROJAN 404 — "SUPERIOR TO ALL OTHER LOADING METHODS" AT CALIFORNIA CONCRETE PLANT

... "Our new Trojan 404 outproduces anything we've ever tried . . . and we've tried them all!" says Robert Tucker of Southern Pacific Milling Co. "We use several other types and makes of loading equipment at our El Rio operation and none of them can match the speed, capacity or easy operation of our 404. We certainly anticipate replacing some of our present equipment with Trojan loaders as we expand our operation."

Southern Pacific, one of the largest rock, gravel and concrete suppliers in Southern California, credits the big Trojan with a real streamlining of their plant operation. With a 9′ wide bucket, the 404 handles over 4½ yds. per pass — loads a 25 ton truck in 1½ minutes . . . and the high travel speed puts this production to work at areas over a mile distant in a matter of minutes . . .

"When you load a 14 ton truck in less than a minute, you have to be pretty sure of yourself," adds operator, Sam Patton, "and the longer, wider wheel base of the Trojan 404 gives me that assurance. Even with a heaped load, it is the most solid, stable loader I have ever operated. I sure agree with the rest of the men here — this 404 is one tremendous machine."

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION BATAVIA, NEW YORK SAN LEANDRO, CALIFORNIA

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

For more facts, use Request Card at page 18 and circle No. 360

A Lima 1001 crawler, used to drive the falsework piling, positions truss steel at the base of the western anchor-span pier. The traveler is in position for dismantling the guy derrick that is erecting the anchor span.

(Continued from preceding page)

form. Derrick C was then used to lift, lower, and place derrick B on the bridge floor beams east, or on the river side, of the column pier.

Guy derrick A worked toward the west, erecting the truss and floor-beam steel for the 420-foot anchor span, while derrick B worked toward mid-span. Steel erection and derrick moves had to be very carefully coordinated to maintain a balanced weight on both sides of the column pier. Once the 420-foot span reached the approach steel, derrick A was dismantled and lowered by the traveler, which was left in position over the last approach pier. Derrick C handled the erection of the steel above and adjacent to the column pier, while derrick B placed steel for the 300-foot cantilever east of the column pier. Clyde 8E hoists, located over the column pier, powered the derricks. Two Ingersoll-Rand 600-cfm Gyro-Flo air compressors powered the Chicago-Pneumatic air wrenches and hammers on the job.

Derricks A and C were dismantled and repositioned across the river to handle the remaining half of the truss bridge. The erection procedure for the east anchor span and the erection of the truss out to mid-span was repeated to complete the water crossing. The only variation was that the falsework bent required 32 piles each, plus a system of batter piles to take the additional stresses caused by erection in bad weather. A barge-mounted derrick powered by a Clyde 8E hoist drove the foundation piles and erected the temporary trusses.

Steel for the 3-span truss, shipped to the site in barges built for Harris by Todd Shipyards, was either picked up directly from the barge or stockpiled on shore for the west anchor span. A 75-ton stiffleg derrick was located at the water line to handle the lifts off the barge, while a Lima 1001 crane handled the yard lifts and positioned steel for the derricks.

Approach-span steel

The approach spans on both sides of the river are 97½ feet in length. The column piers are similar to those for the main truss piers, but slimmer. There are eight 5-foot-deep welded I-sections, including two facial girders for each span. These 97½-foot girders were positioned for each span by the traveler, which was located over the approach pier behind a 19-foot cantilever.

A pinned expansion splice, located at every third span, had to be bolted together so that the traveler could reach the next pier. After an additional two spans were placed, the bolted channels holding the splice together were cut loose.

Steel grating was placed along the approach spans to form the 11-foot roadway divider. A contractor-rigged, skid-mounted stiffleg derrick, having an A-frame mast and counterweighted with 2 tons and an American 2-drum hoist, rode on the bridge grating as it placed grating sections ahead.

This eliminated the use of a truck crane and, since the stiffleg was operated by the steel-working crew, its movements were more easily coordinated. After a few days of positioning grates and finger expansion dams, the crew stopped to line up and bolt the dams with stainless-steel bolts. This left only a small derrick idle instead of a costly crane, and no operator was displaced, since the steel crew manned the derrick.

A. Horton was the superintendent, and Richard Verardo, the project engineer for Harris Structural Steel. John Schnier is the erection manager for the company. H. W. Knox is the resident engineer for Madigan-Hyland, the consultant on the job for the New York State Thruway Authority. THE END

Bearings...

Oil... and How to Save Money

The longer your engines run before need of overhaul—the less your cost of operation. Sinclair Tenol® Motor Oils have earned the reputation not only for giving long bearing life, but also for resisting the formation of harmful carbon deposits. Tenol Oils slash down-time and maintenance costs. Next time management asks how you've cut costs, tell them you've switched to Sinclair Tenol—and show them the results.

Call your Sinclair Representative for further information or write for free literature to Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y. There's no obligation.

Sinclair
Tenol® Motor Oils

For more facts, use Request Card at page 18 and circle No. 361

Pile positioner cuts time for pier construction

Methods

A time-saving device allowed a contractor to do some fast and accurate positioning of steel batter piles during the construction of a lake-front pier in Milwaukee, Wis.

Under the method, the contractor-built barge-mounted pile positioner holds the bottom of the leads; the top of the leads is handled by a crane on an inboard barge. With the help of the device, the leads can be quickly positioned and tilted to the required batter.

The pile positioner, pulled by a continuous-cable tugger hoist, slides on greased tracks for the length of the barge. It also has a forward and backward motion of several feet, with power also provided by a continuous-cable tugger hoist. Tilting is controlled by the hoist line on the crane.

In the construction of South Pier 2, the contractor, Great Lakes Dredge & Dock Co., Chicago, saved money not only for itself but also for the city of Milwaukee. After the first low bid of Great Lakes Dredge & Dock was rejected as being too high, the contracting firm suggested that a new design be made to reduce the cost of construction.

The original design, common in the Great Lakes region, consisted of two rows of wood piles and timber holding back a sheet-pile wall with anchor rods. During construction, this type of wall has to be protected from storms, and this costs a lot of money.

New design aids construction

The new design, developed by Lockwood, Andrews & Newman of Houston, is nearly as sturdy during construction as it is afterward. The design itself is not new, but it is uncommon in the Great Lakes region.

The wall structure of the 1,000× 520-foot pier is built entirely of steel. The 63-foot-long Z-type steel sheeting of the perimeter wall is held in place by an H-beam wale that is welded to a horizontal H-beam strut. The strut, at right angles to the wall, is welded to a pair of H-piles. The piles are driven on opposing batters and meet at the top like rafters on a roof. The H-beam strut, connecting the piles to the wall, is designed to be in tension, but during construction it can easily stand the compressive forces of battering seas.

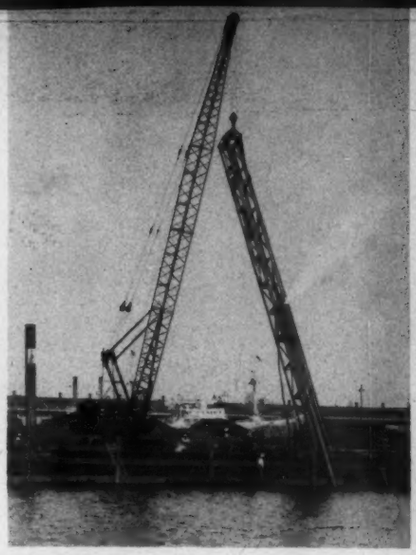
The outer corners of the wall are strengthened by 50-foot-diameter cells of MP101 flat sheet piling 63 feet long. The cells, which are later filled with sand, are an integral part of the Z-sheeting of the perimeter wall.

Modern pier for Seaway shipping

The pier construction is a part of a multimillion-dollar program by the Harbor Commissioners to improve port facilities. By deepening existing slips and building new and bigger piers, they hope to attract the seagoing ships now beginning to use the St. Lawrence Seaway.

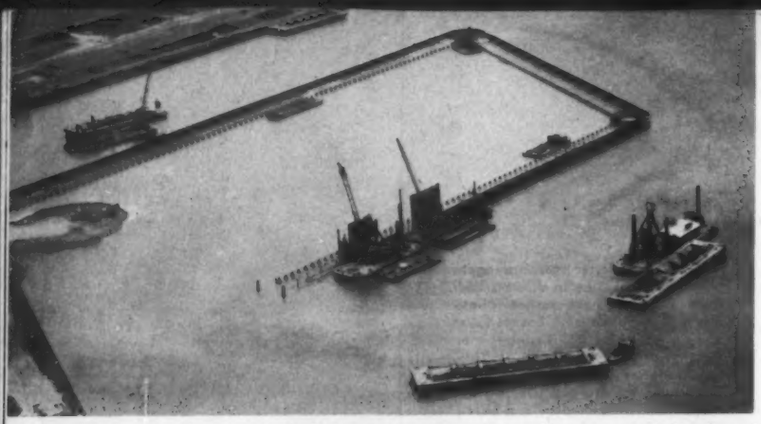
South Pier No. 2, with a slip depth of about 30 feet, will have the latest

(*Continued on next page*)



A pile positioner arrangement saves a lot of time in driving 14-inch H-beam steel batter piles for a Milwaukee pier. Located on the outboard barge, it guides the bottom of the hammer leads. The positioner moves on rails the length of the barge. The top of the leads is handled by a B-E 54-B on an inboard barge. The horizontal H-beam, supported by temporary steel piles, serves as a guide for driving the H-pile.

For more facts, use Request Card at page 18 and circle No. 362



With the H-pile bracing in place, a barge-mounted derrick and a Manitowoc 3000 drive the Z-sheeting for the perimeter wall. Material being loaded to barges by the bucket-type dredges, which are deepening approaches to the slip, will be used to build up the fill area. Most of the fill is being hauled in by truck and pushed into place.

(Continued from preceding page)

facilities for loading and unloading large ships. Freight cars, handling goods from the ships, can use either of the two railroad tracks on the pier. Big semitrailers can move their goods on the conveniently located roadways. Two large covered warehouses on the pier provide temporary storage for articles in transit.

Great Lakes started work on the $3 million contract for the substructure of the pier in May, 1958. The contract included more than 266,500 cubic yards of dredging—216,250 yards from both sides and the end of the pier, and 50,250 yards from slip 1 and the end of Pier No. 1. It covered the building of the perimeter wall, filling the enclosed area with sand, and driving 3,211 composite wood piles within the pier.

Order of construction

Before driving the pairs of batter piles, the contractor had to set horizontal H-beam guide piles. These were supported by temporary steel piles driven vertically into the lake bottom. The guide pile was set so that the top of one flange guided one batter pile, while the top of the other flange guided the opposite batter pile; this allowed their theoretical center line to intersect at the proper elevation.

With the help of the positioning device and a Bucyrus-Erie 5-B crane, a McKiernan-Terry 11-B-3 steam hammer drove the 14-inch H-piles. The piles, which varied in length from 69 to 85 feet, were driven on a 7 on 12 batter on one side, and on a 4½ on 12 batter on the other side. The two piles were cut to grade and

Job equipment, materials

- Manitowoc 3000 crane
- Bucyrus-Erie 54-B crane
- 2 floating steam derricks
- McKiernan-Terry 9-B-3 steam hammer
- McKiernan-Terry 11-B-3 steam hammer
- Ingersoll-Rand 6-inch pump driven by a GM diesel
- International TD-9 tractor with Bucyrus-Erie blade
- Trucks hauling in sand fill
- A number of welding machines
- 4,200,000 pounds of Z-sheeting furnished by Bethlehem Steel Co.
- 538,000 pounds of flat sheeting for cylinders, also by Bethlehem.
- 2,500,000 pounds of steel bearing piles, by U. S. Steel Corp.

A high-pressure stream of water sl... sand fill in between the batter... bracing and the sheet-pile wall. W... is forced through the line by a 6... pump. Background, an Internati... TD-9 dozes the sand into the water.

For reliable performance in prestressed concrete use Bethlehem Stress-Relieved Strand

- *Meets ASTM A416*
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Bethlehem stress-relieved strand delivers top performance in prestressed concrete because its manufacture and heat treatment are precisely controlled. The result is a strand which amply meets the exacting requirements of ASTM specification A416-57T.

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Feel free to talk over your requirements with a Bethlehem engineer. To start the ball rolling, get in touch with the nearest Bethlehem sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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BETHLEHEM STEEL

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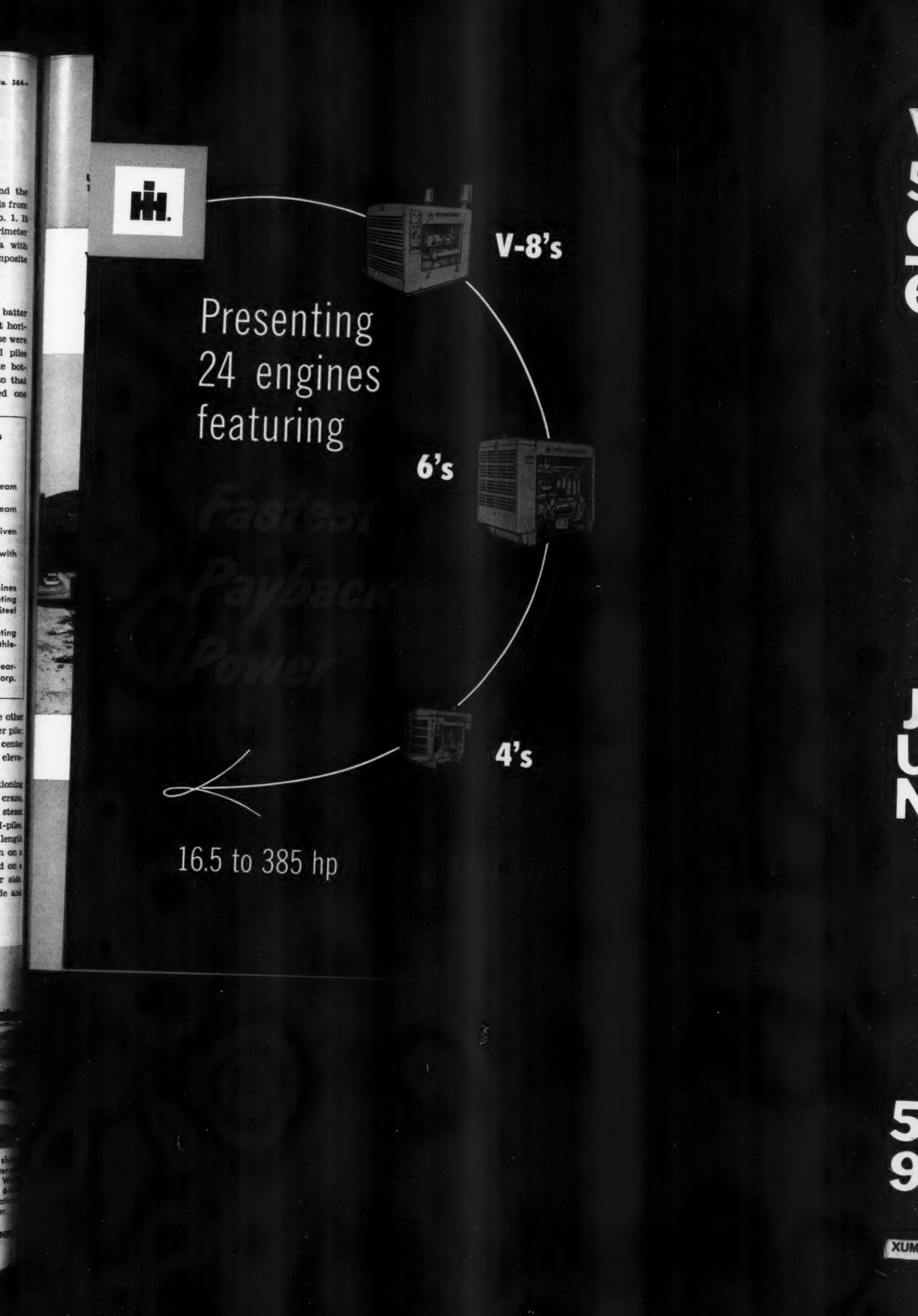
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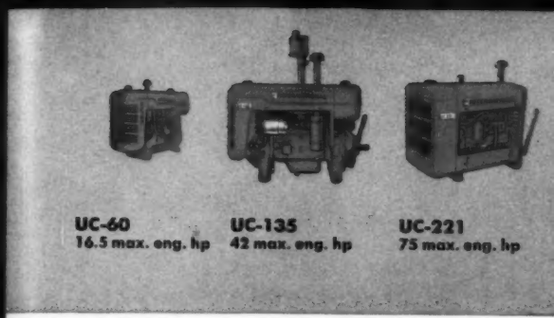

UC-60
16.5 max. eng. hp

UC-135
42 max. eng. hp

UC-221
75 max. eng. hp

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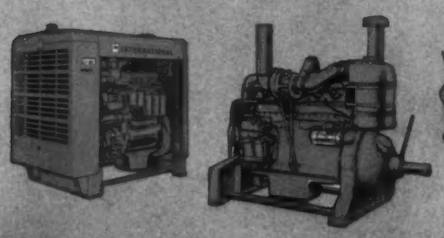
UDT-817
375 int. eng. hp

UDT-1091
265 int. eng. hp



-221
ax. eng. hp

UB-220
83 max. eng. hp

U-308
92 max. eng. hp

UC-263
95 max. eng. hp

U-372
110 max. eng. hp

UB-264
112 max. eng. hp

U-450
134.5 max. eng. hp

U-501
141 max. eng. hp

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International engineers with over a half century of heavy-duty engine design experience make fastest payback power the common feature of all International engines through lowest cost operation, long-working stamina, thorough sealing, and minimum maintenance.

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UV-461—179 max. eng. hp

UV-549—222 max. eng. hp

U-1091—248 max. eng. hp
(nat. gas)

CARBURETED

DIESEL

UD-236—70 int. eng. hp

UD-817
240 int. eng. hp

UD-1091
216 int. eng. hp

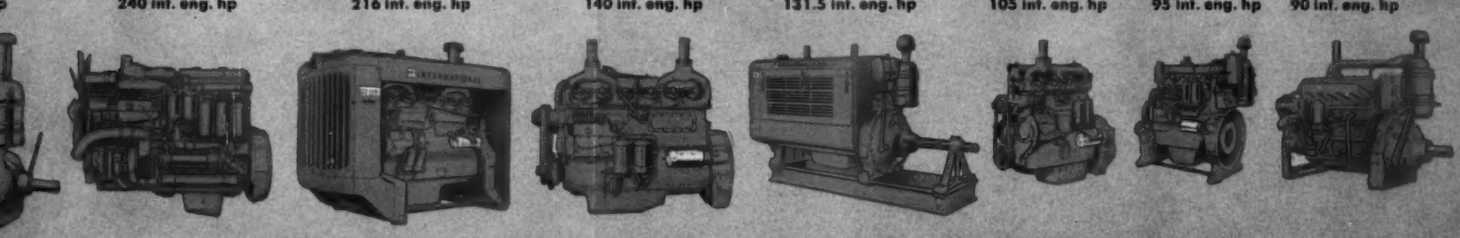
UD-554
140 int. eng. hp

UD-18A
131.5 int. eng. hp

UD-14A
105 int. eng. hp

UD-370
95 int. eng. hp

UD-282
90 int. eng. hp



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	MODEL	RATED RPM	CU. IN. DISPLACEMENT	GASO. HP	LPG HP	NAT. GAS HP
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	UC-135	2000	135	42	42	32
	UC-221	2400	221	75	75	66
	UB-220		220	83	83	70
SIXES	U-308	2400	308	92	96	82.5
	UC-263	2400	263	95	95	85
	U-372	2200	372	110	101	92.5
	UB-264		264	112	112	90
	U-450	2200	450	134.5	130.5	112
	U-501	2200	501	141	134	120
V-EIGHTS	UV-401	2800	401	170	165	142
	UV-461	2600	461	179	175	162
	UV-549	2600	549	222	215	192
	MODEL					
FOURS	UD-370	2200	370	262 @ 1400	4⅝ x 5½	95
	UD-14A	1800	460.7	325 @ 900	4¾ x 6½	105
	UD-236	2400	236	173 @ 1800	3 11/16 x 3 11/16	70
	UD-282	2400	282	217 @ 1800	3 11/16 x 4.39	90
	UD-554	2300	554	400 @ 1300	4⅝ x 5½	140
SIXES	UD-18A	1600	691.1	473 @ 850	4¾ x 6½	131.5
	UD-1091	1500	1090.6	825 @ 1150	5¾ x 7	216
	UDT-1091	1500	1090.6	1000 @ 1250	5¾ x 7	265
	UD-817	2100	817	638 @ 1600	5⅜ x 6	240
	UDT-817	2100	817	1052 @ 1200	5⅜ x 6	375

NOTE: *For carbureted engines use 90% of max. hp shown for intermittent type application and 80% of max. hp for continuous type application. For diesel engines use 80% of intermittent hp shown for continuous duty application.*

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A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers and Bottom-Dump Wagons . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

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Equipped with a Bucyrus-Erie blade, this International TD-9 is used to level the fill and push the material into the pier area. In the background, a Winch-Lift trailer on a Diamond truck dumps its load at the edge of the fill.

The flat sheeting for a 50-foot-diameter cell at the corner of the pier is driven with two McKiernan-Terry steam hammers handled by a Manitowoc, right, and the Great Lakes derrick. Sheeting is being driven around a floating wooden template. ►

welded together with plates.

The next step was to drive the temporary timber piles to support the horizontal H-beam struts. The struts were welded on one end to the pile group and on the other end to the 12-inch wide-flange wale. With the wale acting as a guide, the 63-foot-long sheet piles were driven about 25 feet into the lake bottom. Piles were cut off at elevation plus 8.83. The 11-B-3 hammers, handled by a Manitowoc 3000 crane and a Great Lakes floating derrick, drove the steel sheeting. After the sheeting was in place, it was bolted to the wale and cut to grade.

Sand fill

Since the lake bottom in the area of the pier was more clay than sand, only a small amount of it could be used for filling the pier. Dragline and clamshell dredges, however, were able to scoop up about 67,000 cubic yards of suitable fill material, which was carried by bottom-dump barges inside the perimeter of the pier.

A remaining 469,000 tons of bank-run sand was trucked in at the rate of about 4,000 tons per day; the maximum rate was some 6,000 tons per day. The trucks dumped their loads at the edge of the fill. The material was then leveled off and dozed into the water by an International TD-9 tractor mounting a Bucyrus-Erie blade. The sand was sluiced into place between the piles and the sheeting with a high-pressure hose.

Personnel

For the Great Lakes Dredge & Dock Co., John Wohlgemuth is the Chicago Division superintendent. John Landin is job superintendent, and Don Lewin is assistant superintendent and project engineer. The field engineer for the city is R. C. Aldridge.

Air Reduction Sales opens Denver plant

Air Reduction Sales Co., a division of Air Reduction Co., Inc., New York City, has opened a new oxygen and nitrogen plant in Denver, Colo. William O. Brown is in charge of all Airco operations at Denver. Leo C. Jones will be superintendent.

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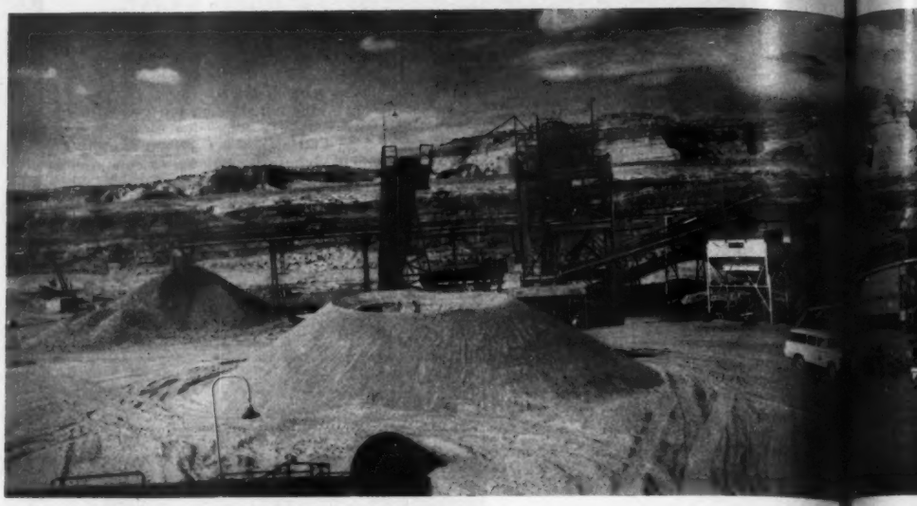
Methods



At the temporary plant, a scalping screen separates the material at 2½ inches, and oversize goes to dead storage, extreme left, for possible future use. The minus 2½-inch material is separated into five sizes, which go to the finished stockpile, left, and three bins. Minus No. 8 goes through a tank and screw classifier, then to a blending stockpile, left foreground. The two types of heavy-media units—for sand and for gravel—are under the shedlike roof. Finished products go from these units to a rescreening and washing plant, then to stockpiles.

Aggregates for 5 million yards of concrete at Glen Cany

are being produced at a rate of some 800 tph aft

Heavy-media separatio asse

A Manitowoc 3500 crane with 2½-yard dragline bucket brings pit gravel to the 6-inch grizzly. The minus 6-inch falls through and is fed onto the long belt leading to the temporary plant in the background.

Three sizes of materials, ranging from No. 8 to 1½-inch, are brought from the p e plants, se mar screening plant to Butler surge bins. Conveyors lead to the plant. The No. 4 nt, made b No. 8 is rescreened as it comes from the bins. 4 to 1½-in

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SPEED- jobs get done faster, better.

ECONOMY- efficient, balanced design, sturdy construction assures enduring economical performance.

EASY OPERATION- simple in design, it is easy to operate—pulls sheet steel, wood, concrete, H-beam and pipe piles with the greatest of ease.

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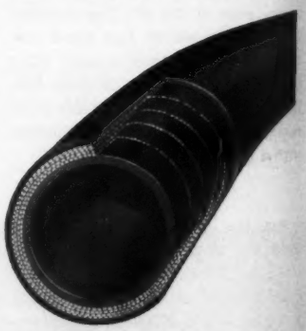
FIND US FAST IN THE YELLOW PAGES	ST. LOUIS, Mo.



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Excellent for open end pump work, this hose has durable rubber tube reinforced with four plies of quality fabric. Tough rubber cover withstands rough use and abrasion. Sizes: 1", 1½", 2", 2½", 3", 4". Ask for catalog showing complete line of CONTRACTORS HOSE, HOSE FITTINGS, BOOTS and WATERPROOF CLOTHING.

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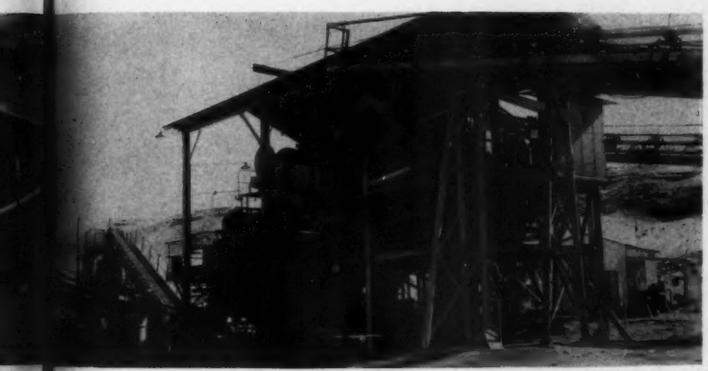
...asses the test

This month, Merritt-Chapman & Scott Corp.'s big aggregate plant starts the tremendous job of producing the 10 million tons of eight different kinds or sizes of aggregates for the 5 million cubic yards of concrete to be placed in Glen Canyon Dam during the next four years. A smaller temporary plant has been producing aggregates for tunnel-lining, bridge-deck, and other requirements in advance of concrete placement in the dam proper.

Producing 800 tph of clean concrete aggregates is the specific task assigned to the big plant. A substantial portion of the gravel deposit has aggregate with a specific gravity less than 2.5. The contractor expects to waste about 20 per cent of the material, which comes into the plant in the size ranges from No. 8 to 1½-inch. Here, heavy-media separation is required.

Pilot units of the heavy-media plant, which were built into the temporary plant, have actually been in



...e plants, set side by side under this roof, handle aggregate separation. This Sweco ..., made by Southwest Engineering Co., handles the combined fraction graded from ...4 to 1½-inch. Both plants have now been relocated in the permanent plant.

A Wemco cone separator handles the sand. Waste is taken off the top of the cone; an air lift brings good material up from the bottom. Both are washed to reclaim the heavy media, which is re-used.

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DeLuxe

SCHLUETER MFG. CO. St. Louis, Mo.

For more facts, use Request Card at page 18 and circle No. 368

EVER SEE A CONTINUOUS TRULY UNDISTURBED SOIL SAMPLE 15, 30 OR EVEN UP TO 60 FEET IN LENGTH

In addition to being able to secure conventional type soil samples, Sprague & Henwood, Inc., also has available the Swedish Soil Sampler to recover undisturbed samples 15, 30 or even up to 60 feet in length. With this device, slide resistance and wall friction are almost eliminated and thin critical layers of soil that usually go unnoticed are easily detected.

Let us help you in solving your foundation testing problems. We have the equipment, personnel, and drilling "know-how" necessary to undertake your particular project. Our complete drilling service is illustrated and described in the new S&H Contract Brochure, write for your copy today.

A Sprague & Henwood crew recovering a 30 foot sample of sensitive marine clay.

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SCRANTON 2, PA.

New York—Philadelphia—Atlanta—Pittsburgh—Grand Junction, Colo.—Buchans, Nfld.

For more facts, use Request Card at page 18 and circle No. 369

A motor crane lifts steel for the tower of the big washing and screening plant that will turn out aggregates for concrete to be used in the dam. Some of the equipment is being installed as the tower goes up.

(*Continued from preceding page*)

operation for about a year. These units, together with the screens, conveyors, washers, and other components that make up the temporary plant, have been incorporated into the new plant, together with enough additional units to boost the output capacity from 190 to 800 tph.

Why heavy-media separation?

Glen Canyon Dam is being built in an area where sandstone is the predominant rock at the surface, and for many feet down. This sandstone is not suitable for concrete aggregate. The only other source of aggregates within reasonable distance is a large gravel deposit in a valley called Wahweap Wash. The deposit, however, contains considerable volumes of chert, and other unsuitable rock.

Studies made by the U. S. Bureau of Reclamation and consulting engineer R. E. Davis of Berkeley, Calif., showed that practically all of the unsuitable materials were also light in weight. It was determined that the elimination of all material with a specific gravity of less than 2.5 would result in an aggregate suitable for use in the exterior faces of the dam and other exposed areas.

A survey of the pit by the Bureau of Reclamation showed that there was an adequate supply of this gravel within a range of four to ten miles of the dam site. One of the first projects started by M-C&S after the award to them of the $108 million contract for building the dam was a more detailed survey and study of the Wahweap gravel deposit.

First, the area was mapped by Fairchild Aerial Surveys, Inc. Then, a seismic profile of the pit was run by Turner & Associates of Phoenix, Ariz., to fix the depth to bedrock. With its own forces, M-C&S then proceeded to drill a series of test holes on a 400-foot grid over the area.

Using a Calweld boring machine with 30-inch bucket and a 44-foot telescoping kelly bar, the crew put the 40 holes down the full depth of the gravel deposit, which averaged about 35 feet. Since the water table was only a few feet below the surface, a 36-inch casing was installed in each hole to hold the sides as the boring continued.

All of the material taken from the holes was screened in a small Overstrom portable screen, and the several sizes were weighed on a platform scale. This sampling provided an accurate picture of the pit and provided the information necessary to proceed with the design of the processing plant.

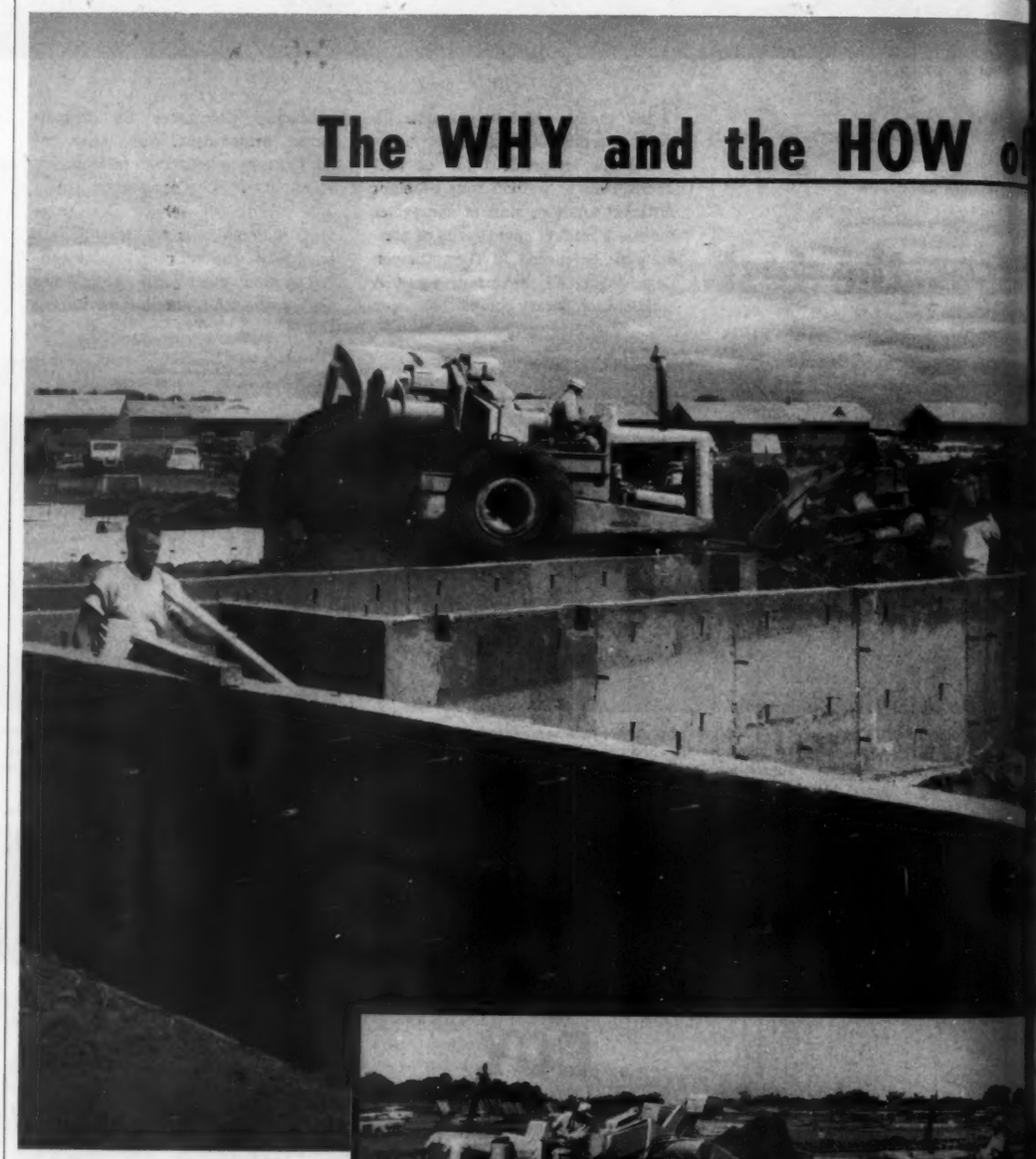
There appeared to be no record of heavy-media separation by a construction contractor, although a few commercial aggregate plants were using the process on their coarse aggregates. And since there was no precedent in the construction or aggregate industries for sand, the contractor turned to the mining field, where the flotation process is commonly used in the concentration of ores.

Build temporary plant

Since a considerable volume of concrete was needed for such items as tunnel lining, plant setups, and bridge deck during the first two years of operations at Glen Canyon, M-C&S decided to set up a temporary gravel-processing plant. This plant served as a pilot model to prove and perfect the process while it produced the aggregates necessary for the early operations.

The temporary plant was set up in the valley at the south edge of the gravel deposit, and at a considerably lower elevation than the big plant

The WHY and the HOW o



Maneuverability — as D 'Pull demonstrates in spreading on the turn — gives this 9-yd scraper the edge over larger machines in subdivision work. Owner Ralph N. Budelman is moving 3,000,000 yd at Elk Grove Village near Chicago, Ill., on a 3 to 4-year contract. Meanwhile, his mobile, roadable-without-permit Model "D's" are available for quick shifts to other jobs.

Push-loaded D 'Pull picks up heaping load at the 6,000-home Elk Grove Village project. Budelman always uses a pusher to get maximum advantage from scraper's capacity. Working without pusher, versatile "D's" can self-load up to 6 yd average dirt in 30 to 40 seconds.

High speed on short hauls cuts cycle time — another advantage in maneuverability, and another reason why D 'Pulls are often superior to larger scrapers in subdivision work. Low-pressure tires make "D's" safe to operate on newly-paved streets. Even with a full load, "D's" roll up and over concrete slabs and curbs without doing damage.

that now stands up on the bank.

A dragline in the pit bucketed the raw gravel over a 6-inch grizzly to a big surge hopper, from which a Telsmith plate feeder delivered a constant flow to a belt conveyor feeding the plant. At various times the plant was fed by draglines that ranged from a Manitowoc 3500 with a 2½-yard bucket up to a Lima 2400 with a 7-yard bucket. In the temporary plant, the conveyors were extended as far as 700 feet out into the pit.

The conveyors delivered the gravel to a screening and washing unit, where a series of screens scalped off everything over 2½-inch and separated the minus 2½-inch into five sizes. The 1½-inch to 2½-inch fraction went directly to finished stockpile. This size contained practically no light material and did not require the heavy-media separation.

Fractions in the three sizes, ¾ to 1½, No. 4 to ¾, and No. 8 to No. 4, were fed to surge bins for delivery to the heavy-media units. Any excess of these sizes over the capacity of the heavy-media units was wasted to dead storage, along with the plus 2½-inch from the scalper.

Sand passing the No. 8 went to a Telsmith 48-inch tank and screw classifier, from which it was conveyed directly to a blending stockpile. There is no heavy-media separation of material passing the No. 8 in either the temporary or the new plant. The processed No. 8 sand is reblended with No. 8 to No. 4 sand to produce the final product used in the concrete mixes.

A Lima 1601 shovel loads finished gravel from the temporary plant into a Cook Bros. 30-ton bottom-dump trailer pulled by a Mack B-62 truck for the 5-mile haul to the concrete plant near the dam site. Media separation units having proved themselves in this temporary setup, the plant has been incorporated into the permanent installation.

Two heavy-media units

Two types of heavy-media unit were installed in the pilot plant, one handling the sand and the other the gravel. The two gravel sizes in the No. 4 to 1½-inch range were recombined and fed to a Sweco heavy-media plant as a composite material. This plant unit was manufactured by Southwest Engineering Co., Los Angeles, Calif.

The separation unit of the plant is an Akins screw separator employing a media with a specific gravity of 2.44. The media is made up by adding a blend of 70 per cent ferrosilicon and 30 per cent magnetite to water. The ferrosilicon has a specific gravity of 6.7 to 7, and the magnetite is 5.0. Both are introduced as finely ground powders that stay in suspension in the water.

As the gravel passes through the tank, the waste floats and is carried out over a weir with the water. The heavy gravel sinks and is carried out of the tank by a screw. Both materials are washed on a divided 5×16-foot Hewitt-Robins screen to remove the heavy media.

All of the media from the washer goes to an Akins densifier where the ferrosilicon and magnetite are reclaimed on a magnetic separator. The densifier returns the required amounts of these materials to maintain the proper specific gravity of the media in the tank, demagnetizing the chemicals as they are returned to the media.

The composite gravel material then goes to a final screen, where it is again separated into the two sizes and delivered to separate stockpiles.

The No. 4 to No. 8 sand was delivered to a Wemco Mobil-Mill, a cone-type separator manufactured by Western Machinery Co., San Francisco, Calif. This unit used sub-

ccessful small-yardage earthmoving

as told by Ralph N. Budelman

One big-yardage job a season — or a lot of small ones?

A contractor with a growing business has to make a big decision, sooner or later. Should he aim for "million-dollar" contracts, with their big machinery, manpower, and planning problems? Or should he keep a simple, compact working set-up and contract for a lot of small-yardage work?

Some go for the big, season-long jobs and do very well. Others find that a season of many small jobs is more to their liking . . . for example, Ralph N. Budelman of North Lake, Illinois. Here Ralph tells why he decided on small-yardage work and how he makes it pay.

hy did I pick the small-yardage business? Well, it's because of a shortage in big contracts. Up here in Chicago area, we've got tollways and expressways all —built, building, or just on blueprints. There's plenty money to be made on big work if you're equipped to the headaches and risk involved.

ago, I decided to specialize in small-yardage work. e got a booming suburban area here, with all kinds dirtwork to be done. New streets are being laid out, sands of new homes are going up, and many busi- are relocating.

means lots of small jobs . . . like a 5,000-yd contract a week's time limit. "Big" jobs too, but in small llments, spread out over the years. I'm working one —a 3,000,000-yd total assignment for Centex Con- ction. They're building 6,000 new homes, a shopping r, and a park at Elk Grove Village. I've been mov- dirt there for a year, one section at a time, and I'll working there 2 or 3 years more. At the same time, doing plenty of side jobs.

Switch jobs on short notice

operate this way because I have flexible equipment adable, fast, high-production rigs to run from one job to another on short notice. All 6 of my scrapers are LeTourneau-Westinghouse D Tournapulls®. I can road them without a permit; they're within all the width and axle-load limits. "D's" have speed — close to 30 mph on the highway. And they carry big loads for their size . . . up to 9 yd of solid pay dirt.

When a quick bid is asked for, I'm ready. For example, a food warehouse suddenly came up with a "crash project" — 40,000 yd had to be moved in a hurry. I entered my bid on a Thursday — had my 6 Model "D's", 2 pushers, a roller, and a grader, on the job the following Tuesday. It was a madhouse, but that dirt really flew.

Must move around fast

Most small jobs have a "crowding" problem . . . buildings on the site, either finished or under construction. I find that D 'Pulls* maneuver easily in and out, around foundations, piles of lumber, and pallets of brick, with little loss of speed. This keeps production rolling.

You might think that I'd move more yards with only 3 or 4 scrapers of larger capacity, but on these short-haul, crowded spreads, I don't believe so. I've made a lot of weight and time studies on my "D's" and on this type of work, they're tops.

Am I fully satisfied? Well, I bought my first "D" in '52 . . . and I'm still buying them.

See the 138-hp, 9-yd D Tournapull. Check its performance on your type of work. Ask for a "no-obligation" demonstration at your convenience.

*Trademark DP-2046-DCJ-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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Where quality is a habit

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(*Continued from preceding page*)

stantially the same media, but a different mechanical process, to make the separation.

The sand was fed into a large steel cone containing the media, which had a specific gravity of about 2.5 at the top and 3.0 at the bottom. The lighter waste materials float out over a weir at the top while the heavy materials sink to the bottom and are removed by an air lift.

Both float and sink are washed on an Allis-Chalmers screen to remove the media. A Dings magnetic separator recovers the magnetite and ferrosilicon from the wash water and returns it to the cone as required. The sand is conveyed to a blending stockpile.

Sand is reblended

The finished heavy-media sand to be delivered to the concrete plant was produced as the two sand fractions from the blending stockpiles were recombined in predetermined proportions. Automatic Feedoweight controls on the sand blend feeders proportioned the two sand sizes. A setting of the rate of feed on one of the feeders automatically adjusted the other one to the predetermined rate.

All of the conveyors in the temporary plant were supplied by Barber-Greene. Except for those in the heavy-media units, screens, washers, etc., are all Telsmith.

Operation of the temporary plant proved that about 60 per cent of the gravel in the 1½-inch to No. 8 range has a specific gravity in excess of 2.5 and can be separated by the heavy-media process. Specifications permit up to 2 per cent of material lighter than 2.5 in the finished product, but sampling of the finished gravel showed that the plant was actually holding this figure down to around 1 per cent.

About 220 tons of raw gravel was fed into the plant per hour. Of this about 40 tph was fed to the Sweco heavy-media unit, and about 10 tph to the Wemco unit. With a recovery of 80 per cent of these materials, the two units were delivering about 40 tph of the three sizes of finished heavy aggregates to the stockpiles. This was adequate to supply the project demands prior to the start of concrete placement on the dam.

Big plant starts operation

M-C&S took bids on the full-scale plant last October and made the award to Intermountain Equipment Co., Spokane, Wash., in November. Elements of the plant began arriving on the site in February, and by the first of this month the plant was being given its shakedown tests preparatory to full-scale operation.

The new plant differs from the temporary one primarily in the size and number of units. The process is essentially the same. Since heavy aggregates are not required for the interior portions of the dam, the big plant sends a substantial portion of the No. 8 to 1½-inch material directly to stockpiles for this use. This, and the addition of the large sizes for the mass concrete, brings the number of sizes or types of material to eight.

The finished products of the plant include five sizes of screened aggregates, ranging from the 3 to 6-inch size down to blended sand, and three sizes of heavy aggregates, ranging from 1½-inch to blended sand.

To produce the required input of about 1,400 tph of gravel from the pit, the contractor is using two large draglines in the 6 to 7-yard class, augmented by scrapers and haul units that bring material in from the more remote areas of the pit. The draglines and the haul units feed the material into hoppers, and belts convey it to a primary surge pile.

The gravel is recovered from this surge pile on a 42-inch belt and carried 900 feet up the side of the valley to the primary screening plant, which is 300 feet higher than the surge pile and 40 feet above the valley floor.

The raw feed is received at the top of the 73-foot-high screen tower and dumped into a splitting hopper that passes the material over two sets of screens. The primary screens are the Hewitt-Robins 6×16 double-deck vibrating type. The 3×6-inch and the 1½×3-inch gradations are washed out of the material at this point and conveyed to the storage bins. The balance of the material passes onto Hewitt-Robins 6×16 triple-deck secondary screens where the 1½×¾-inch, the ¾×4-inch mesh, and the 4×8-inch mesh are removed and conveyed to their proper storage points. The 8 mesh to pan sand is then flumed from the screens to an Eagle Iron Works 32-foot triple-type water-scalping sand sizer. At this point, the surplus sand sizes are removed from the product. The end product is then conveyed through a double-screw washer-classifier and dehydrator also manufactured by Eagle Iron Works.

Present indications are that the water-washing requirement for the plant is approximately 7,000 gpm. Of this quantity, 4,500 gpm will be obtained from water wells; the balance required will be pumped from the Wahweap. With a blending of the water being used, the sulfate content of the mixture will be such that the soluble sulfates in the sands may be washed out and meet specifications. Well water will be used on one line of screens, and a blend of well and river water will be used on

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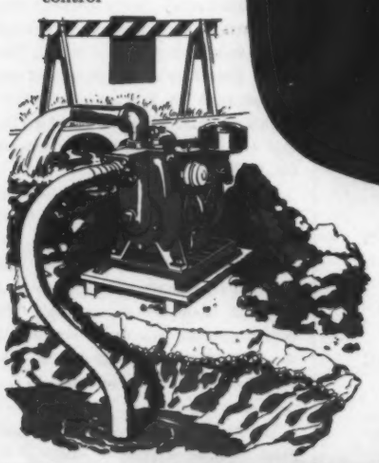

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For more facts, use Request Card at page 18 and circle No. 371

A 1,500-pound roller on a 6-foot boom extension attached to the regular boom of a standard truck-mounted Gradall solves the problem of compacting steep slopes.

Case history

Attach roller to digger to compact steep slopes

Ingenuity in adapting the multi-purpose Warner & Swasey Gradall to meet an unusual on-the-job situation produced an immediate profit payoff for the McWhorter Crane Service of North Hollywood, Calif.

The problem was to quickly and effectively handle a job of compacting the steep slopes of a bridge approach at Long Beach, Calif. The solution was the use of a specially designed 1,500-pound roller on a 6-foot boom extension attached to the regular boom of a standard truck-mounted Gradall.

The weight of the special roller in combination with the powerful down-thrust of the Gradall boom enabled the operator to do a fast and effective job of compacting this fill in spite of its steep slope.

For further information about Gradalls, write to The Warner & Swasey Co., Dept. C&E, 5701 Euclid Ave., Cleveland, Ohio, or use the Request Card at page 18. Circle No. 25.

(Continued from preceding page)

the opposite line of screens.

Finished materials go to a tunnel bunkering system consisting of eight bunkers with capacities ranging from 3,000 to 4,000 tons. A single reclaiming tunnel delivers the aggregates to the fleet of truck-trailers that haul the 5.2 miles to the concrete plant at the dam site. This fleet consists primarily of 12 Cook Bros. 30-ton bottom-dump trailers pulled by Mack B-62 trucks.

The haul road is quite an engineering and construction accomplishment in itself. The 50-foot-wide roadway is surfaced with local caliche and gravel. It has a maximum adverse grade of 1½ per cent for the loaded trucks.

The big Glen Canyon Dam project is being run by a Merritt-Chapman & Scott Corp. staff headed by project manager Allen R. Bacon, project engineer Angus H. Griffin, and general superintendent Forrest H. Jones. The superintendent of the aggregate plants is Jim Brown.

L. F. "Lem" Wylie is project construction engineer for the Bureau of Reclamation on the Glen Canyon project. THE END

Case history

Flotation tires allow grader to navigate swamp

The installation of Harmo flotation tires on its Austin-Western Model 99-H motor grader permitted the Straits Construction Co., Inc., of St. Ignace, Mich., to operate that machine in mire so bad that it rendered even crawler tractors useless. The job was a grading project for the Michigan State Highway Department in the Curtis, Mich., area.

Prior to installation of these tires, it was impossible to do any work because of the nature of the fill and the wet muck encountered when ditching. (This highway borders South Manistique Lake and traverses several bad swamps.) After installation, states the company, the grader encountered no difficulty and performed a workmanlike job without any further trouble; in fact, on several occasions it was used to extricate mired crawler tractors.

For further information on these tires, write to the Harmo Tire & Rubber Corp., Dept. C&E, 1050 18th St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 110.

Harry Pinello reports: For top dirtmoving production...

Fast scrapers, big pushers are "musts" ...but the grader is just as important!

With one quick pass, the 190-hp LeTourneau-Westinghouse grader smooths out rutted haul road. This torque-converter L-W grader alone handled all haul-road and fill maintenance on Pinello's 4-mile U.S. 24 contract... helped put this big job ahead of schedule.

Although 7 Tournapull scrapers dump sand and gravel almost continuously on this ¼-mile fill, 27.4-mph POWER-*Flow* 660 easily keeps area smooth and level. This unit is equipped with power-shift moldboard — which shifts 26½" left or right of center position — saves costly backing and maneuvering time. Comments operator Harry Pritts, "I like this torque-converter 660 grader... it has plenty of weight and power to get heavy work done easily and fast. And I can really use the power-shift moldboard to good advantage here... sure helps to speed up this job."

Veteran earthmover Harry Pinello of Colorado Springs, Colo., knows that *fast* scrapers are a necessity because they are the machines that actually *move* the pay-yardage (he owns 7 LeTourneau-Westinghouse Tournapulls®). He knows, too, that how *much* pay-dirt a scraper moves in each load depends not only on easy-loading characteristics but also on the speed and power of the pusher (his chief tractor: an L-W 420-hp Twin-C*). He's also aware that the *time* needed for a scraper to complete a load-haul-spread-return cycle at maximum profit rests as much on the haul road's condition, as on the speed-ability of the scrapers.

That's why Harry Pinello uses a LeTourneau-Westinghouse Adams* Model 660 POWER-*Flow*® grader to keep haul roads and fill areas in tip-top shape. On the job illustrated — four laning 4 miles of U.S. highway 24 near Colorado Springs — his 190-hp torque-converter grader worked regularly over the important haul roads... leveling ridges, filling in ruts and cutting drainage ditches. In the fill area, with 7 L-W 'Pulls* spreading sand and gravel almost continuously, POWER-*Flow* 660 easily kept fill leveled... to make compaction easier and to permit scrapers to spread on-the-run.

Because the "660" helped to keep scrapers moving fast and smooth, the job was jumped ahead of schedule...with 20% of all dirtwork completed...in just 16 eight-hour working days. Pleased with job's progress, owner Harry Pinello says, "Adams graders are the best we have ever used on our jobs. *They handle larger loads and have far less downtime.*"

Let us give you all the facts on the 190-hp POWER-*Flow 660* grader. Six other L-W Adams model graders are available, 60 to 160 hp. Ask for a demonstration.

*Trademark G-2041-DCJ-1

LW

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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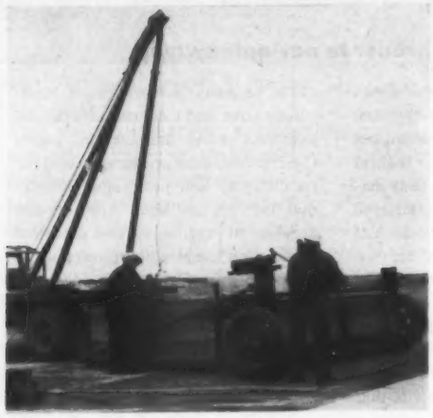

Installation of concrete bases for runway lighting fixtures is being done after paving work at Glasgow AFB, Glasgow, Mont. The key in the operation is this 12-foot-square box which has a 3-foot-square hole in the bottom. It is spotted directly over the location of a light base.

Methods

Drill excavates bases for taxiway lighting

Concrete bases are excavated and cast in place after bituminous shoulder pavement is laid

Matching asphalt pavement to existing manholes and other structures in place is a time-consuming job with results that are often less than completely satisfactory. This is especially true in airport runway and taxiway shoulders, where tolerances are small.

At Glasgow Air Force Base, Glasgow, Mont., the paving contractor, Peter Kiewit Sons' Co., Sheridan, Wyo., avoided this difficulty by installing the bases and manholes for both runway and taxiway lighting after the bituminous pavement had been placed. The results were as near perfect as could be hoped for, and a few pieces of special equipment made the operation fast and economical.

The best example of this work was the placing of more than 900 light bases along the sides and ends of runways and taxiways. This operation was done by Commonwealth Electric Co., Lincoln, Nebr., which subcontracted the electrical work from Kiewit.

The underground ducts, as well as subdrains and other underground installations, were placed as soon as

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The new Homelite "300" Pumps not only work faster . . . they last longer. Standard equipment on all the "300" pumps is a new shaft seal that mates carbon seat against ceramic coated bronze ring. This new seal lasts up to 25 times longer under toughest working conditions.

Only 103 pounds, complete with built-in gasoline engine, the "300" pumps can be put to work anyplace fast. They self prime at 28 ft. above water level. They handle muddy water without clogging. And they start and work in any weather.

See them in action soon. See the quiet, slow-speed model for economical, high capacity pumping . . . or the standard-speed model for general jobs where higher discharge pressures are required . . . or the high-volume pressure pump model for jetting, pumping through long discharge hose or piping and other jobs requiring top discharge pressures. We'll gladly demonstrate any or all of these models at your request.

Homelite factory branches are located throughout the country. Your nearest one is as close as your phone. Call them or write for convincing demonstration or rapid service in any way.

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Wheels on the box can be jacked down to convert it to a trailer. Here the box lies flat on the pavement while a Jaques hydraulic digger on an International 6×6 truck moves into position so that the auger is directly over the hole in the box.

These holes go 4 feet deep, though the auger with its 4-inch kelly bar can go down as much as 14 feet. All material brought up stays in the box; workmen merely do a little shoveling to keep the material away from the hole.

the subbase material had been compacted on the graded taxiway. Trenching machines excavated the duct trenches, ducts were carefully laid in sand bedding, and the trenches were backfilled. The backfill was placed in shallow lifts and compacted by Jackson electric pan-type vibrators to bring this area up to the same density as the surrounding subbase.

The gravel base and bituminous paving of the shoulders were then placed. Since there were no manholes or other obstructions to be matched, the paving progressed at maximum speed, and the finished surface was true to grade and free of warps or irregularities.

Commonwealth then proceeded to install the concrete bases, which also serve as pull boxes to give access to the ducts below. The rectangular central shaft of the boxes extends down 4 feet to surround the ducts, while the top flares out to make a 3-foot-square base that contains the pull-box cover and a pipe riser for the light.

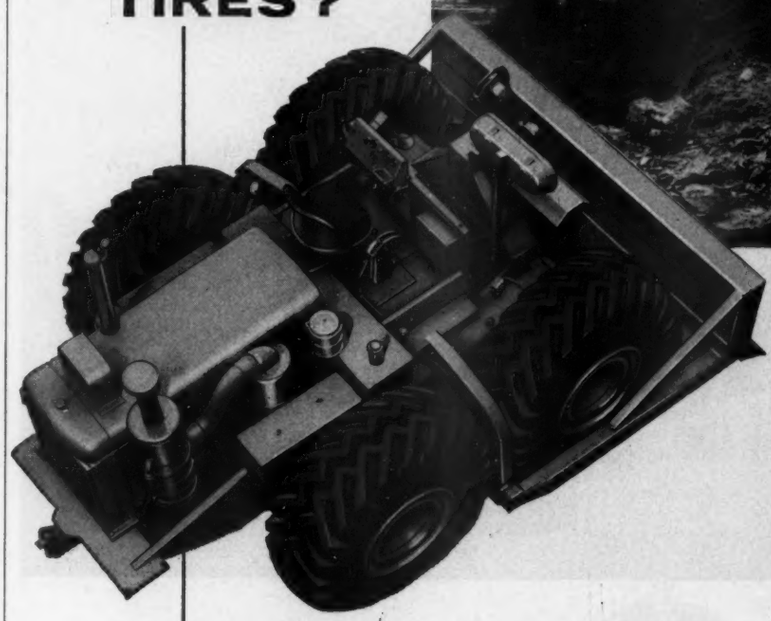
After the exact location of the base was marked out on the pavement, and the outside lines of the 3-foot-square top were sawed through, this piece of pavement was cut out.

A big job-built box, placed directly

(*Continued on next page*)

The special steel form for a base is fitted with a corrugated cardboard sheath before the unit is placed in a hole. The form is upside down as the workman slides the cardboard sheath over it. Concrete was chuted into place from transit mixers.

TRACKS? TIRES? which type of tractor is best?



Heavy-duty Tournatractor — 218 hp — speeds to 17.2 mph forward, 7.2 mph reverse — power-shift constant-mesh transmission with torque converter — multiple-disc air brakes with 3,762 sq in. of braking surface — skid steer — tires: standard 21.00-25 16-ply, optional wide base 26.5-25 14-ply; choice of traction or rock service treads.

Work tool attachments — bulldozer — Angledozer® — root rake — push-block — tree stinger — power-control-unit.

The *job* is the key to your answer. You have to deal with 2 types of tractor work on every earthmoving contract: (1) concentrated pushing, dozing, and hauling in restricted areas, and (2) scattered hit-and-run work over the entire work site (or *several* work sites).

Q. Which does a better job on these basically different types of work: crawlers or rubber-tired tractors?

A. For necessary "stay put" jobs in limited areas, crawlers may prove best . . . because of their greater lugging power at slow speeds. This means heavy short-haul work, push-loading big scrapers, dozing in mud or rock-filled earth. BUT tractors-on-rubber are better for those "hit-and-run" jobs, where speed and mobility mean extra profit. Such jobs include push-loading, leveling scattered fill, towing "part-time" scrapers, stockpiling, clean-up, maintenance of haul and access roads, finish-grading, emergency push-pull anytime, anywhere, on your project.

Q. What's the best ratio of crawlers-to-rubber for best job efficiency?

A. Analyze the tractor work in your contract schedule. Compare "fixed position" and "mobile" work requirements. You may have only enough "hit-and-run" work for one rubber-tired tractor — or you may need more for extra profit. Chances are that on most jobs, of *any* size, you can profit more with at least *one* heavy-duty tractor-on-rubber.

Q. What does Tournatractor® offer that other rubber-tired tractors don't have?

A. The big difference is *proof of performance.* When you buy a Tournatractor, you're getting a tractor without "bugs". This 218-hp, 17-mph tractor has been used by contractors all over the world on every possible tractor job. Knowledge gained over the years has resulted in continuous improvement in mechanical efficiency and performance. It's the *only* thoroughly job-proven, rubber-tired tractor available for heavy earthmoving work.

Here are a few quick facts about the Model C Tournatractor . . . *Drawbar pull:* as good as comparable priced crawlers at speeds over 2 mph. *Mobility:* to go anywhere at speeds to 17 mph. *Roadability:* travels anywhere without damage to concrete, blacktop, planking, or rail ties. *Quick speed shift:* saves time making speed changes on the run. *Easy operation:* with electric control of dozer blade and other attachments. *Low maintenance:* because of far fewer parts, simple construction.

Ask for a copy of the L-W bulletin 56-061-T for full details.

CT-1977-DC-1

LW LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

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◄ Material in the box is being dumped in a disposal area. A truck with winch and A-frame tows the 2-wheeled box to the area, and the hoist is used to lift one end while the material dumps out of the end that has been hinged like a tailgate.

After concrete has cured, a Ford tractor with Wagner front-end loader pulls the form out of the hole. The result is a perfectly smooth surface that matches the pavement on all sides. Wiring and setting of the light fixtures is all that remains to be done. ►

(*Continued from preceding page*)

over the hole, was one of the key pieces of equipment in the operation. It was a steel-reinforced plank box 12 feet square with sides 3 feet high. In the center of its bottom was a 3-foot-square opening. On one end of the box was a pair of truck wheels, mounted so that they could be raised or lowered by hydraulic jacks.

To start the operation, a truck with a winch and A-frame picked up one end of the box and towed it trailer-fashion into place so that the opening in the bottom of the box rested directly over the hole cut in the pavement. The winch truck lowered the box, and the wheels were jacked up until the box lay flat on the pavement.

Drill makes excavation

A truck-mounted earth-boring machine was then spotted over the hole. This was a Jaques hydraulic digger with a 4-inch-square kelly bar, 14 feet long, to which either 30 or 48-inch augers could be attached. The drill was powered by a Ford industrial engine, and the entire machine was mounted on the rear of a G.I. International 6×6 truck.

The digger quickly excavated a 30-inch hole, depositing the excavated material in the box. A small amount of hand work squared up the hole to the desired size, cleaned out around the ducts at the bottom, and worked the excavated material back away from the hole in the bottom of the box.

With the excavation completed, the winch truck picked one end of the box off the pavement as the wheels were jacked down to raise the other end. The truck then towed the box off the runway to a dump area. Here, it raised the box to a vertical position, and the hinged rear side swung open to dump the load. The pavement was left as clean as when the job started.

Forms have paper liners

The contractor had some steel forms built especially for this job. They were light enough to be handled and placed by two workmen, and they could be set to exact grade and position in a few minutes. Before placing the forms, the workmen fitted a corrugated-paper boxlike liner over the steel form that shaped the inside of the pull box.

Concrete was placed directly from

World's biggest scraper units need... and use... B.F.Goodrich Hi-Torque brakes

WEISS DAM, ALABAMA—A struck capacity of 40 cu. yds. makes the M-R-S Model 250-HW tractor-scraper the world's largest hydraulic tractor-scraper combination. And with powerful 600-h.p. engines pushing them to speeds of 34 miles an hour, these units need the finest stopping power available.

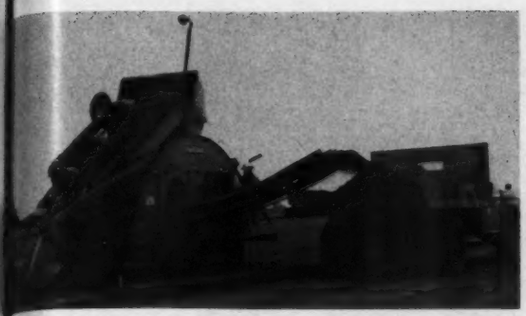
That's why M-R-S uses new B.F.Goodrich Hi-Torque Brakes. Now at work on the Weiss Dam Project, M-R-S scrapers move heaping loads at high speeds along a ¾ mile haul. And they make each round trip with complete safety, because B.F.Goodrich Hi-Torque Brakes stop *twice as fast* as conventional brakes, with less chance of brake fade.

Exclusive "full-circle" stopping power provides more uniform lining pressure than any other off-road drum brake. In addition, B.F.Goodrich Hi-Torque Brakes have an automatic adjusting feature which eliminates maintenance throughout lining life. Lining changes can be made with standard hand tools, and no lubrication is necessary.

B.F.Goodrich Hi-Torque Brakes on the M-R-S 250-HW tractor-scrapers enable operators to control the placement and depth of spreads, even on steep grades. So next time you buy tractor-scrapers, dump trucks or any other wheeled off-road vehicles, remember that B.F.Goodrich Hi-Torque Brakes reduce cycle time—provide greater safety—cut expensive maintenance. Ask your equipment manufacturer for details, or write: *B.F.Goodrich Aviation Products, a division of The B.F.Goodrich Company, Dept. CE-69, Troy, Ohio.*

B.F.Goodrich ***Hi-Torque brakes***

For more facts, use Request Card at page 18 and circle No. 376



...rly job that moved fast was installation of underground conduits. ...sons Model 250 Trenchliner excavates for a 6-inch perforated metal ...in. Excavation is being loaded to a Chevrolet 6400 truck because ...rent material was specified as backfill. An ingenious arrangement in the box of a dump truck speeds the backfilling. In this case, filter gravel is being chuted to the trench for the Hel-Cor subdrain pipe. As the backfill is built up in shallow lifts, it is compacted by Jackson vibratory compactors powered by the Jackson generator on the trailer. In the background, another lift of backfill is being placed in the trench. This assembly-line method saved the contractor valuable time.

transit mixers and vibrated into place around the form. The form was usually held down and in place by four or more sandbags placed at the corners of the projecting steel frame that supported the form on the pavement. The concrete, finished to match the adjoining bituminous pavement, was covered with wet burlap to cure.

The following day, the form was picked out by a Ford tractor equipped with a Wagner front-end shovel. After a minimum of cleaning and re-oiling, the form was ready for use on another base.

Commonwealth's crews then pulled wire into place and set the light fixtures to complete the job.

Personnel

Supervising the work for Commonwealth Electric Co. was superintendent Herbert Koshalek. The project manager for Peter Kiewit Sons' Co. was Nick Evans. The work at Glasgow Air Force Base was done under the Walla Walla District of the Corps of Engineers with John Jacobson serving as resident engineer.

THE END

Garden State Parkway map features distress sign

The New Jersey Garden State Parkway has a map folder that includes a "Send Help" sign for disabled vehicles. Display of such a sign from the side or rear window of a parked car is intended to alert passing motorists to report the signal for help at the next toll booth.

The new sign is to supplement the white-handkerchief distress signal currently recognized on the Parkway. It is included as a panel in the map folder, which gives details of the 173-mile toll road.

Copies of the new map may be obtained free at Parkway toll booths.

Book lists rental rates of construction machinery

The Construction Equipment Owners Association of British Columbia, Canada, has issued its "Rental Rates and Directory for Construction Equipment" for 1959. The rates are given per month, week, day, and some even per hour on every type of construction machinery.

The 52-page book is available from the association office, 969 W. Broadway, Vancouver 9, B. C., Canada. The price is $2 plus a five per cent tax.

For more facts, circle No. 377→

Wants dependable source for Asphalt --buys from STANDARD OIL

Sarrington Construction keeps on schedule, gets other benefits from using STANDARD Asphalt

When you put down 8.3 miles of Asphalt in nine working days, your materials have to *be there* when they're needed. Sarrington Construction had at least two good things working for them when they contracted to pave a section of Wisconsin State Highway 49, southeast of Ripon. They had (1) a dependable source of supply for Asphalt and (2) on-the-spot assistance from an experienced Asphalt man. They had contracted for STANDARD Asphalt.

Deliveries of 85-100 grade STANDARD Asphalt came to Sarrington's continuous mix plant on schedule from Standard's Whiting Refinery 195 miles away. This is one of four strategically located Standard Oil refineries Sarrington could draw upon for deliveries. From Milwaukee came Frank Cocking, an experienced Asphalt salesman with 25 years' service with Standard.

Delivery on schedule, well located Asphalt supply sources, technical service by experienced men, attention to contracts when Asphalt is in short supply as well as when it is plentiful. This is what Sarrington Construction gets by buying from Standard Oil. You can get this sort of service, too. Call the Standard Oil office near you in any of the 15 Midwest or Rocky Mountain states. Or write **Standard Oil Company (Indiana), 910 South Michigan Ave., Chicago 80, Illinois.**

You expect more from STANDARD and you get it!

Having someone who knows Asphalt construction on hand when you're putting down the road can be a help. Frank Cocking discusses how job is going with David Gasser, Sarrington Construction owner-partner. Here contractor is laying three inch pavement—1¾ inch binder, 1¼ inch wearing surface—on 22 ft. width. David Gasser directs firm's highway paving work. Partner John Scott supervises rest of Sarrington's operations throughout Wisconsin, applying STANDARD Asphalt in Sealcoat work.

Methods

An inexpensive way of sounding depth to rock requires only a hammer and one geophone. One man strikes hammer blows on the earth's surface; an electronic unit measures the time interval of the wave lengths; time-distance graphs determine depth.

Rock sounding—cheap

A fast, inexpensive method for sounding depth to rock is based on the seismic refraction principle, but the usual dynamite and multiple geophones are replaced by successive hammer blows on the earth's surface at varying distances from a single stationary geophone. An electronic unit measures the time interval for the wave to travel through the earth. Time-distance graphs are employed to determine the depth to layers of materials, which transmit the wave at different velocities.

Measuring depths

Depths from 5 to 65 feet can be measured easily. Not only is depth to rock found without excavation, rodding, boring, or blasting, but usually the hardness can be estimated as well. Depths are determined immediately in the field. From 10 to 20 minutes is required per depth sounded. The only crew needed is a skilled instrument operator and one or two unskilled men. The equipment can be carried easily by two men into remote areas.

The chief advantages of the new technique, compared to borings or conventional seismics, are cheapness of information made possible by speedy, on-the-spot results; portability of equipment; and low equipment and personnel costs. The characteristics of the equipment make the technique particularly suitable for reconnaissance surveys to find bedrock on route locations.

Experience has shown that, in a survey of this type, 12 miles of interstate highway can be completed in two days. Detailed rock profiles can then be made, by this method, in areas where rock is encountered. Borings or test pits are used in questionable areas, but only a few are necessary to confirm the results.

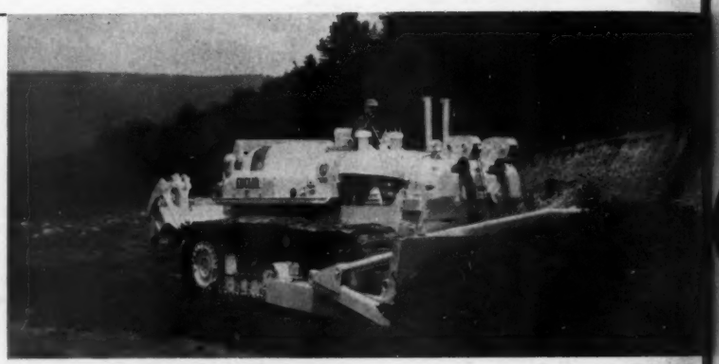
Although the system cannot give the specific information provided by borings, it serves well in places where borings cannot penetrate—at reasonable cost—as in overburden with numerous boulders.

The equipment and procedures for this method of sounding depth to rock have been developed and tested since 1951. The method originated at the University of Witwatersrand in South Africa, and development continued at the University of Wisconsin and the Mid-State Engineering Co., Baraboo, Wis.

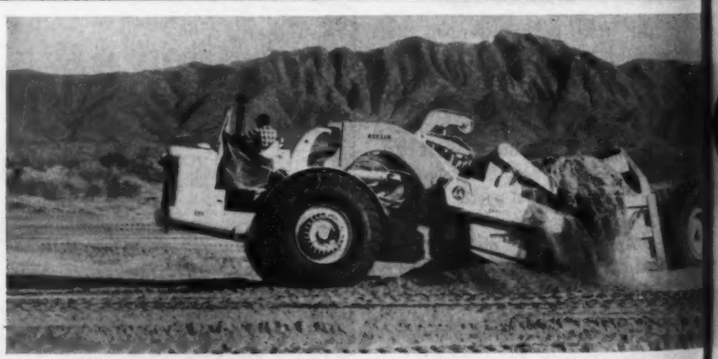
THE END

EUCLID'S BIG 3-

TC-12
TWIN-POWER CRAWLER

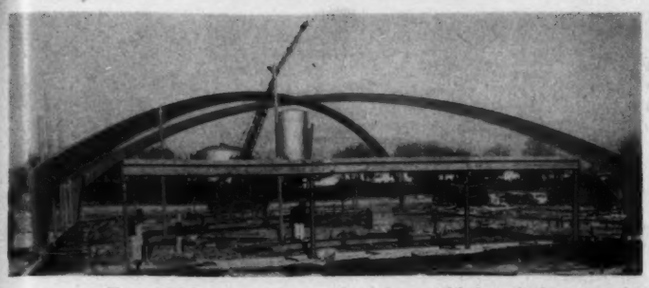


S-18
21 YD. SCRAPER



TS-24
"TWIN" SCRAPER

BIG POWER . . . BIG CAPACITY . . . BIG PERFORMANCE



These 141-foot box-section arches of arc-welded steel plate comprise the basic framework of the 102-square-foot auditorium for a new Lutheran High School in St. Louis. Steel-arch fabrication was speeded by the Lincoln Electric "squirt" welding technique, in which the gun is guided on a track, the wire electrode is fed automatically, and flux is deposited continuously for uniform weld deposit.

Special welding technique speeds steel erection

A fast welding technique on two 141-foot box-section rib arches stepped up construction of an auditorium for the new Lutheran High School in St. Louis. Stupp Brothers Bridge & Iron Co., St. Louis, fabricated the arches by using Lincoln Electric's "squirt" welding method in which the gun is guided on a track, the wire electrode is fed automatically, and flux is deposited continuously to insure a uniform weld deposit on the arches.

The rib arches were shop-fabricated in halves by submerged-arc welding. Welded to the arch webs at 4-foot intervals are small triangular brackets, each carrying two bolts for attachment of transverse wood roof beams for a lamella roof design. Opposite each bracket, internal diaphragm plates are fillet-welded on the inside to one web and plug-welded from the outside to the other web.

Cover plates, joined by double-bevel arc welds, range in thickness from 1¾ inches at the outboard ends to ½ inch at the center. The box section of each arch is 36 inches deep at the corners and tapers in a smooth curve to 17 inches at the center.

your best bet to beat the profit squeeze

Two engines deliver 425 net h.p. to power trains . . . separate Torqmatic Drives and full power shift . . . independent track drives . . . 27" standard shoes . . . 8 track rollers . . . excellent accessibility.

30 yds. heaped . . . 336 h.p. engine . . . 4 speed Torqmatic Drive with converter lock-up . . . independent hydraulic controls for bowl, apron and ejector . . . 27.00 x 33 tires with 33.5 x 33 optional.

Two engines with a total of well over 500 h.p. . . . separate Torqmatic Drives . . . 24 yds. struck . . . 32 yds. heaped . . . NoSpin differentials . . . all wheel drive . . . unequalled grade-ability.

WITH COSTS still on the rise, obsolete methods and machines don't help your competitive position or your profit picture . . . can cost you jobs and money. To get your share of work . . . at prices that bring a good return on investment . . . equipment has to produce more without increasing costs. Modern earth-moving techniques and big machines can make the difference between a problem and a decent profit.

Euclid's Big 3 . . . part of an intensive 5-year development program . . . were designed to help you lick the pinch on profits. With big power, big capacity and big performance, each of these "Eucs" provides more work-ability than any other machine in its class. They'll enable you to bid more work . . . small jobs to big projects . . . more profitably. Your Euclid dealer can prove it with *all the facts* . . . you can't afford to make decisions based on partial facts. Be sure to get in touch with him before you buy any new earthmoving equipment.

EUCLID Division of General Motors, Cleveland 17, Ohio

GENERAL MOTORS EUCLID

EUCLID EQUIPMENT

FOR MOVING EARTH, ROCK, COAL AND ORE

Case history

Standard drilling machine adapted to special job

Ingenuity in adapting a standard machine to a special job was well demonstrated in the test coring of a Detroit relief sewer by Fattore & Garavaglia Co., the Detroit contractors which built the sewer and obtained the cores.

The problem lay in the fact that the sewer diameter was from 11 to 15 feet, both dimensions being considerably beyond the maximum reach of standard drilling machines.

The adaptation of a standard Truco Model E diamond drilling machine to a special job is demonstrated in the test coring of a Detroit sewer.

To solve this problem, a Truco Model E portable diamond drilling machine was removed from its standard telescoping column and mounted on a 4-inch-OD sectional iron pipe. This pipe was braced against opposite sides of the sewer, thus providing rigidity for operation and leverage for drilling, and cores were taken at various angles without difficulty. Also, the setup was readily moved from location to obtain the required 44 cores at points 1,000 feet apart.

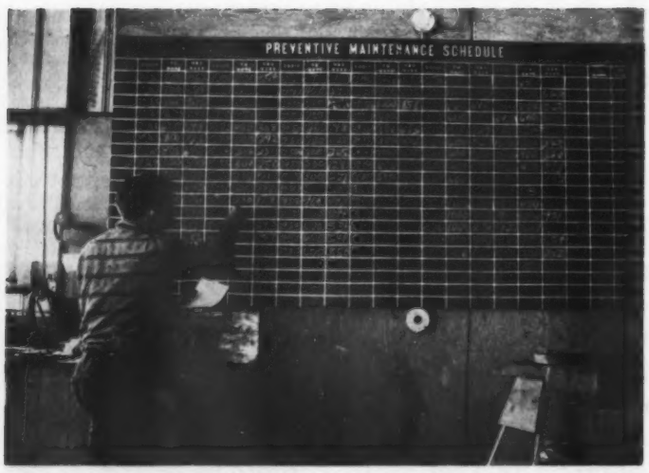
All the cores were obtained with a single Truco 6¼-inch-OD diamond bit, which delivered complete cores measuring 6×24 to 6×30 inches.

For further information write to the Truco Masonry Drilling Division, Wheel Trueing Tool Co., Dept. C&E, 3200-53 W. Davison Ave., Detroit 38, Mich., or use the Request Card at page 18. Circle No. 94.

For more facts, circle No. 378

The nerve center of the M-C&S maintenance setup at Glen Canyon is this 201×60-foot Butler building that houses general repair shop, blacksmith and welding shop, machine shop, and master mechanic's office. It is located on a bench beside the canyon and near the job headquarters. The three International Payhaulers in front are ready for servicing.

Maintenance report from Glen Canyon



A preventive-maintenance schedule board shows the shop crew when each piece of equipment is due for PM 100 and 500-hour checks. The first column identifies the equipment by number; the second shows hours at which preventive maintenance is due; the third shows the hours a machine has worked up to date.

Preventive maintenance is a system for the Merritt-Chapman & Scott Corp. equipment fleet at Glen Canyon Dam. There is nothing haphazard about it. Nothing is left to chance.

Master mechanic J. A. "Art" Moren knows that a preventive-maintenance program on a big spread like his entails extensive and accurate records. He devised a system that works, and he keeps it working

Operator vigilance, fixed-period shop checks, systematic lubrication, and scientific drain-oil analysis are four of the principal features of the program. Daily tire inspection by the B. F. Goodrich Co. service men on the project also aids in holding downtime to a minimum.

Vigilance on the part of the operators is an essential part of any successful preventive-maintenance program, since the operator should be the first to notice any malfunctioning. M-C&S makes it simple for an operator to report the machine's condition by supplying him with a daily equipment report form.

The operator of each piece of heavy equipment is required to complete an equipment report for each shift worked. On this simple form, he identifies the machine, himself, and the date and shift worked, together with the number of hours actually worked. He then completes a simple check list of items that might need attention. The original of this report goes with the time report to the shop office. A self-carbon copy goes to the shop, where a mechanic checks it and investigates any items designated as needing attention.

TRIAL SAMPLES

Of World-Famous WHITMORE'S Lubricants NOW IN AEROSOL SPRAY-ON CANS!

HANDI-LUBE LIQUID GEAR COMPOSITION

For open gears, sliding surfaces—exclusive formulas eliminate metal to metal contact, keep wear on the lubricant not the metal—no breakdown even after prolonged use under water—available for every climatic condition—packaged in handy 16-oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

WIRE ROPE SPRAY LUBRICANT

Exclusive formulas for lubricating and protecting wire rope, chain, springs. Penetrates to the core of wire rope minimizing internal friction and increasing usable life up to 300%—special protective qualities absolutely eliminate corrosion—non-gumming qualities reduce "carry-back"—packaged in handy 16 oz. aerosol spray-on containers or in bulk containers—send for a free trial sample.

65 YEARS OF LEADERSHIP LUBRICATING THE FOLLOWING:

- Open Gears, Dipper Sticks, Cams
- Enclosed Gear Cases
- Wire Rope and Cable
- Hydraulic Units, Torque Converters
- Roller, Ball, and Sleeve Bearings
- Speed Reducers

Est. 1893

THE WHITMORE MANUFACTURING CO.

LUBRICATING ENGINEERS

CLEVELAND 4, OHIO, U.S.A. PHONE: VULCAN 3-7272

For more facts, use Request Card at page 18 and circle No. 379

MAXIMUM COMPACTION!

built to handle MORE JOBS!

PRODUCTS BACKED BY EXPERIENCE

BARCO

VIBRA TAMP

1. Granular Base Materials **2. Bituminous Surfacing**

MANY USES! The handiest machine you ever used for tamping, compacting, and smoothing sand, gravel, soil, cinders, chips, cement and soil mixtures, and asphalt surfacing. Use it in restricted areas, close to walls, for patch jobs, leveling footings, smoothing fill and countless other places!

QUALITY CONSTRUCTION—Definitely superior value. Tough, rugged, dependable, yet precision-built.

ECONOMICAL—Low initial cost; low operating cost. ORDER YOUR VIBRA-TAMP NOW. *Send for Catalog No. 630.*

Sold and Serviced by the Nation's Leading Distributors

BARCO MANUFACTURING CO.

518G Hough Street • Barrington, Illinois

For more facts, use Request Card at page 18 and circle No. 380

An International lube truck, one of two working in the field, carries eight Alemite reels and dispenses five kinds of oil and grease, chassis lubricant, air, and water. Water is carried in a separate tank; a Curtis compressor powered by a Continental engine supplies air.

Taking advantage of a slack period, the lube crew gives Payhaulers a lubrication and check. This is a straight drive-through arrangement. When machines are working, they are serviced right in the field.

Four-point service program, accurate records minimize downtime for big equipment spread

In the shop office, this report serves two purposes. First, it gives a daily report of the hours worked. This is entered in the preventive-maintenance manual for a machine, where the cumulative total-hours-worked is recorded. This cumulative total-hours-worked is also posted on a chalk board in the shop, which serves as a guide for the 100 and 500-hour servicing.

The second use of the daily report is for the follow-up on the servicing. The original of the report is held in the office until the copy is returned from the shop, showing that the mechanic has followed through on the servicing indicated by the operator. If this was of consequence, such as leaks, overheating, or excessive smoking, it is noted in the PM manual for that machine and becomes a part of the machine's permanent service record.

Most of the larger machines are equipped with hour meters that give a positive record of the time worked. This reading is used to determine the necessity for periodic checks of these machines. Pickups, cars, and other minor equipment are checked on a 30-day basis. Other machines depend on the operator's daily report of time actually worked for the timing of their periodic checks.

Regular checks in shop

The big chalk board in the shop gives an up-to-the-minute picture of the scheduling of the 100 and 500-hour checks for each major piece of equipment. The board lists the machine number, hours at which the

(*Continued on next page*)

Before each piece of equipment comes into the shop, it is thoroughly cleaned with a Malsbary steam cleaner. This Payhauler is being given a thorough going-over. A cleaning agent is used to help get stubborn deposits off the rigs.

IGLOO...

rugged as the men who use them

IGLOO leads in water cooler sales because it's stronger, lasts longer. IGLOO will keep more men on the job more of the time. When you order water coolers, specify IGLOO. Available in 2, 3, 5, 10 and 15 gallon sizes.

IGLOO No.1

IGLOO CORPORATION

BOX 8227 MEMPHIS 4, TENN.

first in sales/buy the best cooler--buy IGLOO

For more facts, use Request Card at page 18 and circle No. 381

NEW! EFCO BRIDGE COLUMN FORMS

EFCO Bridge Column Forms used on New Orleans overpass save time and labor. Precision construction permits quick, easy stripping as shown. Adaptable to a wide range of uses. Ideal for forming pier nosings when combined with regular EFCO Forms.

MAIL COUPON TODAY

Economy Forms Corp.
Box 128-E
H. P. Station
Des Moines, Iowa

Please send information on EFCO Bridge Column Forms, and address of nearest sales office.

Name.....

Firm name.....

Address.....

City.....State.....

For more facts, use coupon or circle No. 382

Preventive maintenance requires constant work. In the main shop, a workman prepares to make a cut across a sheet of ½-inch steel with a Victor torch.

For more facts on Gulf spread on insert, use coupon or circle No. 385.

(*Continued from preceding page*)

next check is due, and number of hours operated up to date. A quick rundown of the board tells the shop foreman which rig he must take next. This makes it possible for him to schedule a steady flow of work.

Practically all of the machines at Glen Canyon are new on the job, and preventive maintenance and warranty went hand in hand for the duration of the warranty period. After each 100 hours of operation, each machine is brought into the shop and given a thorough and systematic check in accordance with the rig's preventive-maintenance manual. For the International and Euclid equipment, such as the 20 Payhaulers and nine TD-24 tractors, the manufacturer supplied two copies of a preventive-maintenance manual with each machine. Similar manuals for the other pieces of equipment were prepared.

The manual designates just what is to be done at each 100 and 500-hour check. This information is transcribed to a job form on which the mechanic indicates what he does. The completed form is returned to the office, where the information is recorded in the PM manual as a part of the machine's permanent record.

The time summary in the manual gives the cumulative hours of operation, amount of downtime, per cent of utilization, and reasons for downtime. The cost summary in the manual gives the cumulative cost of parts, labor, lubrication, and fuel. Together, these reports provide a complete detailed record of each individual machine.

Shops in metal buildings

The general repair shop, which handles the maintenance checks, general repairs, and overhauls, is housed in the largest of a series of Butler metal buildings strung out on a bench beside the canyon and adjacent to the M-C&S field office. This 201×60-foot structure houses, besides the general repair shop, a machine shop, welding shop, and office.

Next to the shop is a warehouse building the same size as the shop. In a portion of this building, International Harvester Co. maintained a stock of warranty parts during the initial warranty period on the new equipment. When this period expired, International continued to maintain this stock as a store. Since M-C&S buys parts directly from this store, it does not have to carry its own stock of these parts. Cummins has a similar deal on parts for its engines. This stock is maintained in a large trailer parked just outside the warehouse.

Extending out from one end of the shop building is a steel supply yard where plate and rolled sections of many sizes and shapes are stocked. A 10-ton overhead electric crane serves this yard and travels the full length of the shop area inside the building.

Seven big roll-up doors in the front of the shop building open into drive-in stalls large enough to take such rigs as Payhaulers, D9 tractors, and other large machines. Inside are complete facilities for any type of overhaul or repair. The machine shop can produce almost any type of part on its two lathes, shaper, milling machine, radial drill press, and 100 and 500-ton hydraulic presses. The welding shop has ten Hobart welding machines and a Victor automatic cutting torch.

Before being brought into the shop

Lincoln **WELDYNAMICS**

NEWS ABOUT ARC WELDING AT WORK CUTTING COSTS

Components of new-type dragline bucket teeth are flame-cut from heat-treated T-1 steel plate. A finished tooth is at top, left, and one tacked for welding on the right.

HOME-MADE BUCKET TEETH OUTLAST STANDARD TEETH FOUR-TO-ONE

The Northern Illinois Coal Company makes their own bucket teeth and saves money doing it. Here's why.

Commercial cast manganese teeth cost $68 each. The cast teeth would only last for 56 days of digging and would sometimes break off. Repairs were expensive.

The cost of fabricated teeth is $60 each, including material and labor. In addition, the fabricated bucket teeth have a total service life of 200 digging days.

The fabricated teeth are made of low alloy steel, welded with a manual Lincolnweld semi-automatic welder (Squirt Welder). Before being put into service, they receive a coating of hardsurfacing material to give a tough, abrasion-resistant surface. This hardsurfacing is put on with the "Squirt" Welder, using the same electrode and a special alloy flux, H-545.

The new fabricated bucket teeth cost less initially and have better performance which has cut maintenance and downtime to one-quarter.

Composite tooth showing "squirt" welds that fasten two steel flank plates to the web and cast steel tip.

HANDY POWER UNIT RUNS EQUIPMENT-WELDS

The handiest power tool of all is the one that furnishes power for all the rest. Weldanpower is a combination welder-power unit. It generates 5 KVA of 115/230-volt AC power for lights, tools, pumps and 200 amps of AC welding current on a 60% duty cycle—both at the same time!

The Weldanpower is compact and light; easily transported in the bed of a pick-up truck. The air-cooled Wisconsin gasoline engine is easy to start, easy to maintain and economical to operate.

Bulletin 4503.1 describes the Weldanpower in detail. Write for your copy.

The LINCOLN ELECTRIC CO.
Dept. 5327 • Cleveland 17, Ohio
The World's Largest Manufacturer of Arc Welding Equipment

For more facts, use Request Card at page 18 and circle No. 383

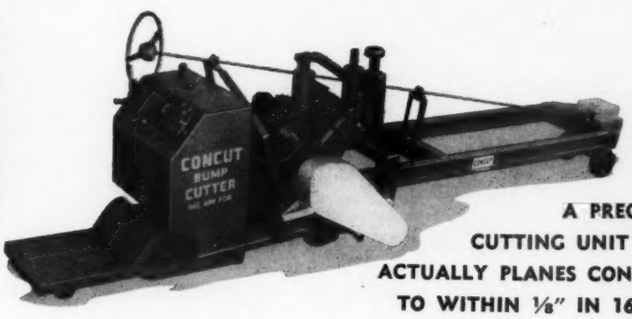
CONCUT OFFERS 2 EXCLUSIVE METHODS THAT REDUCE COSTS

The CONCUT Jointmaster 2400 equipped with the New Longitudinal Sawing Attachment

ONE OPERATOR SAWS BOTH LONGITUDINAL & TRANSVERSE JOINTS

The **CONCUT Jointmaster 2400** has for some time been recognized as the most practical and efficient machine available for large Airbase and Highway sawing jobs. . . . And now with the addition of the new Longitudinal Sawing Attachment its efficiency has increased even more.
As a time and money saver, where the job is large and critical, this combination of Concut Units stands unchallenged for efficiency and economy.

THE FAMOUS BUMP CUTTER by Concut



A PRECISION CUTTING UNIT THAT ACTUALLY PLANES CONCRETE TO WITHIN ⅛" IN 16 FEET.

The only Concrete Cutting Machine that planes concrete or asphalt to within ⅛-inch in 16 ft. (State Highway departments and Corps of Engineers specifications) at speeds up to 100 ft. per minute.

Widely publicized for its amazing accomplishments, the **CONCUT BUMP CUTTER** is at present the only answer to planing jobs formerly considered impossible.

CONCUT

FIRST WITH THE FINEST

Contact your nearest Concut representative or write

CONCUT Sales Inc., 1845 Belcroft Ave. El Monte, Calif.

DISTRIBUTED IN THE MIDWEST BY . . .

CONCUT MID-AMERICA, INC., 5783 LINCOLN AVE., CHICAGO 45, ILL.

For more facts, use Request Card at page 18 and circle No. 384

Moves 1,050,000 yards of earth, sand rock and granite on

GULF MAKES THINGS

In May 1958, the Ballenger Paving Company of Greenville, South Carolina, was given 270 days to clear, grade and drain 6 miles of Interstate 85, a South Carolina section of the Federal Highway system.

Ballenger not only had to dig through a million cubic yards of dirt and sand rock, they had to blast their way through large outcrops of stubborn granite. A really tough job, with power and speed at a premium.

They finished on schedule, and with plenty of proof that Gulf makes things run better. All earth moving equipment was powered with Gulf Dieselect—an automotive-type diesel fuel specifically refined for high-speed, high-powered diesel service.

"On a tight schedule like ours," reports Ryan Graham, Ballenger Paving Superintendent, "a major consideration in choosing Gulf Dieselect was the better performance it provides.

"In our fleet of Eucs, Cats, crawlers and graders we use about 1500 gallons of Gulf Dieselect a day. We find it to be uniformly clean-burning, and our maintenance records show that it gives us no problems in the way of engine deposits or the fouling of fuel injectors."

Clean-burning Gulf Dieselect is one of many high quality petroleum products that help keep contractors' equipment delivering an extra margin of performance, with lower maintenance costs.

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RU

See how
next project
(or revise
"Contractor
ance "bi
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and Your B

GULF OIL C
Dept. DM, Gu

Gulf man on t
with Ryan Gra
left, Ernest L.

tough schedule—proves again

RUN BETTER!

See how Gulf makes things run better on your next project. Contact your nearest Gulf office. Or write for revised edition of 88-page "Contractors' Guide" (the maintenance "bible" for heavy equipment), and for the booklet, "Gulf and Your Business."

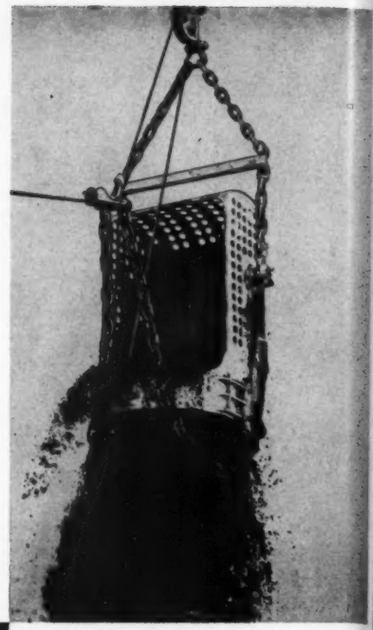
GULF

GULF OIL CORPORATION
Dept. DM, Gulf Bldg., Pittsburgh 30, Pa.

Gulf man on the job checks fuel and lubrication requirements with Ryan Graham, Ballenger Paving Superintendent. On the left, Ernest L. Trowell, Gulf Sales Representative.

SR-9525

HIGHER PRODUCTION
LOWER COSTS
BIGGER PROFITS



HENDRIX DRAGLINE BUCKETS

3 types for every digging purpose

TYPE "LS" . . . *Lightweight*
A lighter weight bucket designed for levee and drainage work

TYPE "TS" *General Purpose*
Unexcelled for Medium-Duty Service

TYPE "HS" . . *Heavy Duty*
A heavy-duty bucket for moving shale, gravel and similar formations

¼ to 40 Cubic Yards

All Hendrix Buckets available without perforations

Hendrix Lightweight DRAGLINE BUCKETS

HENDRIX MANUFACTURING CO., Inc.
MANSFIELD, LOUISIANA

For more facts, use Request Card at page 18 and circle No. 386

Master mechanic J. A. "Art" Moren keeps in touch with his men and equipment by phone and by G-E mobile radio. Incidentally, how'd you like Kay Chambers for a secretary?

each piece of equipment is thoroughly steam-cleaned. A Malsbary Model 250 steam cleaner provides the steam, and Turco SteamOff compound helps loosen heavy or stubborn deposits. The steam-cleaning equipment usually works a full shift each day to clean the machines, whether or not they are going into the shop for work.

For servicing equipment outside the shop, the mechanics have the use of six field service trucks, each carrying a Hobart welding generator, gas cutting torch, and other commonly used tools. There is also a small shop on the east side of the canyon to aid in servicing the equipment on that side.

Before the bridge was opened, the only means of bringing equipment from the bottom of the canyon or the east side was the cableway. At times when the cableway was not available, machines were given their PM checks, repairs, and even complete overhauls right out in the field. During these first two years, the servicemen used Cushman motor scooters to cross the footbridge from one side of the canyon to the other.

Daily lubrication

Under the supervision of lube superintendent John W. Brown, each machine is lubricated and serviced on a regular schedule. His 15 servicemen make use of two lube trucks, three fuel trucks, and the 40×60-foot Butler shop building that serves as shop, warehouse, and headquarters.

The lubrication trucks are International ACF-172 models, each carrying eight Alemite pumps and hose reels to dispense five types of oil, chassis lubricant, air, and water. A Curtis compressor driven by a Continental engine supplies the air. Electricity for night lighting and power tools is furnished by a Kohler generator. Each of the rigs carries an 8-compartment tank for its lubricants.

One of the rigs is stationed on each side of the canyon to handle the work on its respective side, but the servicing of machines at the bottom of the canyon is difficult. This problem was solved by using the 25-ton cableway to pick up one of the service trucks in a special sling and lower it to the bottom of the canyon on either side of the river. The workmen ride one of the "monkey slides" down the canyon wall, pick up the truck, and service whatever equipment is working there. The cableway then brings the truck back to the top. This spectacular "air lift" is an everyday occurrence when there are machines at work in the canyon.

Heavy equipment that is working is lubricated by the mobile rigs between shifts, during lunch hours, or when it can be replaced by a spare. Pickups, sedans, trucks, and machines not actually at work are brought into the lube shop. Inside of the drive-through shop, a grease rack is completely equipped with Alemite and Graco lube equipment.

The building also serves as warehouse for the lubricants. Barrels of lubricants are received on a truck-level platform outside the building. They can be rolled through the wide door to an inside platform at the same level where the lube trucks are loaded. A space over the office room in one corner of the building stores a complete supply of all types of filters used on the project.

On a site as remote as Glen Canyon, large supplies of fuels and lu-

(*Continued on next page*)

LACLEDE

pre-assembled

DOWEL

UNITS

Specify Laclede . . . the only spacer that has a welded, rigid pipe socket to insure positive positioning of the free end of the dowel in either expansion or contraction joints.

speed paving jobs

Expansion sleeves, chairs and spacer bars are all precision shop welded . . . by Laclede . . . into a complete dowel assembly for expansion, contraction and construction joints.

Delivered to the job site in a single, easy-to-handle unit that maintains rigid alignment, Laclede's new dowel assemblies speed paving jobs by cutting installation labor costs. Additional time and money can be saved by specifying Laclede dowel assemblies with dowels shop coated—ready for immediate installation.

LACLEDE HIGHWAY STEELS

- *prefabricated dowel units*
- *multi-rib round reinforcing bars*
- *center joints*
- *tie bars*
- *7-wire strand for prestressing*
- *welded wire fabric*
- *recess joints*
- *accessories*

LACLEDE

LACLEDE STEEL COMPANY

SAINT LOUIS, MISSOURI ◆ Producers of Steel for Industry and Construction

For more facts, use Request Card at page 18 and circle No. 387

The lubrication shop receives barrels on the platform at left. Another platform at the same level inside the building is used to load lube trucks.

This trailer, used by Cummins to stock warranty parts during the early stage of the job when almost all equipment was under warranty, is now a store for Cummins parts. M-C&S buys parts as needed.

(Continued from preceding page)

bricants must be kept on hand to insure a constant supply to all of the equipment. Diesel fuel and gasoline are trucked to the job from a refinery in Salt Lake City, a distance of more than 350 miles. Standard Oil Co. lubricants are shipped by rail from refineries in California to Marysvale, Utah, and then brought some 180 miles by truck to the job.

Job storage tanks were provided for 6,000 gallons of engine oil on each side of the canyon, 2,000 gallons of engine oil at the bottom of the canyon, 6,000 gallons of compressor oil on each side, and 100,000 gallons of diesel fuel in tanks on both sides and at the bottom of the canyon. A 1-inch pipeline was extended down into each keyway excavation and to the bottom of the canyon on each side, to deliver fuel and oils to these inaccessible areas.

Oil deliveries to equipment working on the upper levels are made by three International fuel trucks, each carrying 1,000 gallons of diesel fuel and 250 gallons of gasoline. Dispensing pumps driven from the power take-off of the trucks and autowinding reels speed these deliveries and simplify the work of the servicemen.

A careful log is kept of the disposition of every gallon of fuel, and this is balanced with the receipts. This information is passed on to the PM office, where it is entered in the records of the various machines.

To help keep track of the location of each piece of equipment, Brown keeps a pin board on the wall of his office, and each rig is listed on the board. A colored pin, placed after the name and number of the rig, indicates its location on the job.

Each of the lubrication service crews keeps a detailed record of its work each shift on a form prepared for that purpose. This form not only indicates exactly what they have done, but gives them an opportunity to note any leaks or other troubles that should be reported to the repair shop.

Drain oil is laboratory-tested

Each time the oil is drained from the crankcase of one of the engines, a ¼-pint sample is saved. This is placed in a special bottle supplied for that purpose and labeled to identify the machine from which it

Here's why a NEW 375-hp Internation rth

CAN OUT-EARN ANY OTHER BI HE

In the new 27 cu. yd. 495 Paywagon®, big earning advantages start with the new International DT-817 diesel engine. Forty-ton payloads highball upgrade or over rough and soft spots faster than ever behind the locomotive-like wallop of 375 turbocharged hp—more power per struck yard than any comparable wagon! Next, the "495" Paywagon's exclusive power-opened clamshell doors give positive dumping control—and retract parallel with hopper sides—"clean as a whistle" from wiper plate action! Pull-away clearance, to straddle 60"-high windrows, eliminates dumping delay! Too, the 495 Paywagon has new full 90° turning in either direction; new road-hugging design to gain top mph safely, out and back, at speeds up to 32.0 mph. Plus exclusive extra operator comfort and control features that reward you with extra production!

In the new 24 cu. yd. 495 Payscraper,® exclusive International DT-817 diesel power earning advantages team up with new cutting width and tapered bowl design—to heap-load faster than any other 3-axle scraper of its size. And it hauls at speeds up to 32.0 mph! The scraper's big 131" cutting width promotes fast dirt break-away, permits both unit and pusher to ope within the cut for best traction. Exclusive tapered b design boils dirt toward center, reducing side spill permitting positive, forced ejection even of sticky frozen materials. More hp per struck yard than competitive unit—wheel and bowl leveling adjust —custom-designed cable control unit—full 90° tu all team up to make the 495 Payscraper the top ducer of its size class!

In the new 24 cu. yd. 295 Payscraper—you ge same big-capacity, high-torque engine that power 495's: the 375 hp DT-817! You get haul speeds u 29.1 mph—matched with new automotive comfor control features, that include a 16-adjustment seat. the scraper unit of the 2-axle 295 is the same h loading, tapered bowl, wide-cut scraper featured 495 Payscraper!

Match any new International Earthmover a any similar equipment on your job or in your m for capacity, operating ease, low costs and net earning ability. See your International Constru Equipment Distributor!

was taken. These samples are mailed to PMS, Inc., New York City, for lab analysis.

The laboratory returns a report which is of great assistance in determining when something is beginning to go wrong with an engine. Those reports which indicate that trouble is in store are written in red on the report form to bring them to the immediate attention of the master mechanic.

At one point, the lab reports indicated that the GMC engines on the job needed a different fuel. Their fuel supply was changed, and the trouble immediately cleared up. In another case, the report showed too much soot in the Payhauler engines. A new and better type of filter was substituted for the one that had been in use, and this trouble disappeared. These are just two of many examples of helpful information from the oil tests.

Tire service

Servicing the more than 900 tires on the project was a big job in itself, but this chore was taken over by the B. F. Goodrich Co. The Goodrich service crew, headed by foreman Orville T. Underwood, set up a tire preventive-maintenance system which has resulted in exceptionally long tire life and little downtime because of tire trouble.

The principal feature of the program is the twice-daily inspection of the tires on all the heavy equipment and the inspection at least once a week of every tire on the job. This continuing inspection enables the servicemen to spot potential tire trouble and get the tires changed before downtime results.

Three tire-service rigs are stationed on the project, one on the east side and two on the west side of the canyon. The rig on the east side is a Dodge power wagon fitted with a hoist for handling the heavy tires and a compressor to supply air and operate tools. One of the rigs on the west side is a big International truck fitted with a Thiele big-tire service body. This rig has an air-powered hoist for handling the heavy tires and a compressor powered by the truck engine. The third rig is somewhat smaller, but it has its own compressor and power tools.

One of the 40×60-foot Butler buildings is used as tire headquarters. Here, minor repairs are made, tires are mounted and dismounted, and all sizes of new tires are stocked. Since there are as many as 47 different types and sizes of tires on the job, the new tire stock is a large item.

Serve large spread

The maintenance, lubrication, and tire-service crews serve a large and varied spread of equipment. Some of the principal units are:

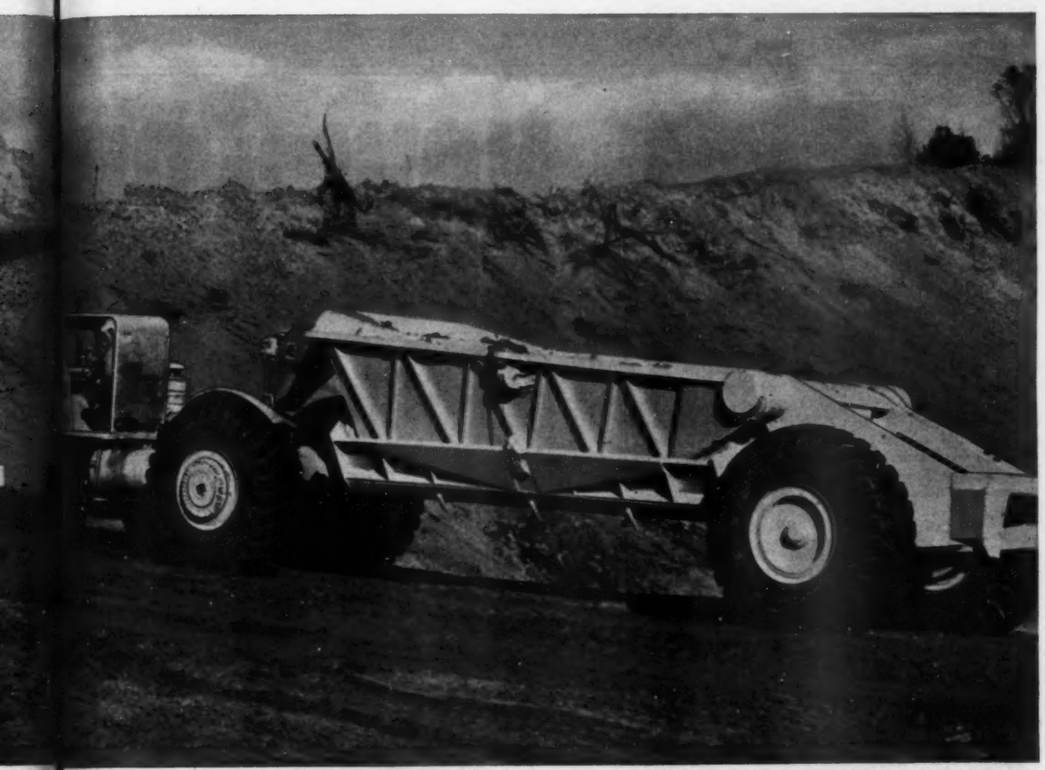
- 20 International Payhaulers
- 9 International TD-24 tractors
- 4 Caterpillar D9 tractors
- 2 Eimco 104 and 105 tractors
- 12 Mack truck-tractors with Cook Bros. trailers
- 14 or more shovels and cranes, from small truck cranes to 7-yard draglines
- 40 pickups
- 15 flatbed and other trucks
- 10 sedans
- 3 big cableways
- 3 "monkey slides" (man hoists)
- 3 Rex double Pumpcretes
- 6 Koehring Dumptors

Many others bring the total number of pieces to well over 150.

To man the maintenance setup, master mechanic Art Moren has a crew of 56 mechanics, machinists, and welders, who work three shifts a day, five days a week. In addition, there are 17 employees in the warehouse and the 15 lubrication servicemen under lubrication superintendent John W. Brown.

Project manager for Merritt-Chapman & Scott Corp. on the Glen Canyon project is Allen R. Bacon. General superintendent is Forrest H. Jones. The Glen Canyon Dam project of the Bureau of Reclamation is under the supervision of project construction engineer L. F. Wylie.

THE END



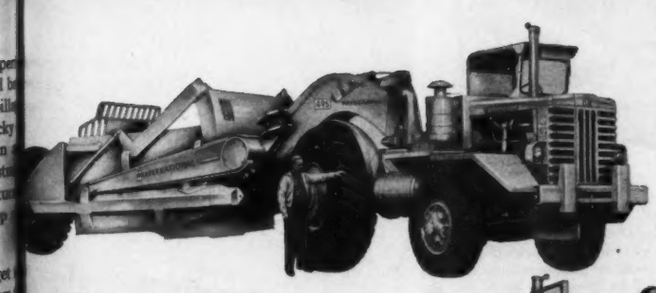
Heaped, the new 375 hp International Paywagon highballs 40.5 cu. yd. (or 40.5 tons) as fast as 32.0 mph. Choose either 4-speed Power Shift or 9-speed constant mesh transmission drive.

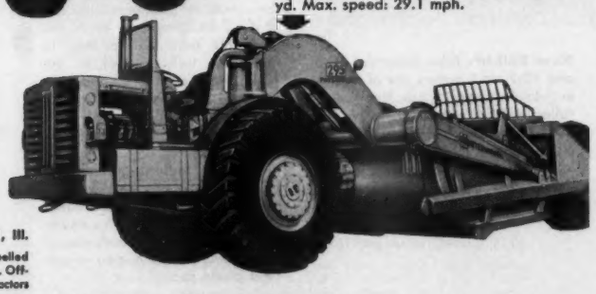
...rthmover

...HEEL RIG ON YOUR JOB!

Controlled with new custom-designed cable control unit, the 375 hp International 495 Payscraper speeds 34 cu. yd. heaped loads up to 32.0 mph. Its apron can "gape" open as high as 98"—for sure ejection of all materials!

Positive-acting air brakes—16-adjustment spring hydraulic seat—unobstructed vision—flush-deck safety—power steering—all add up to production-boosting operator comfort and ease of control of the new 375 hp 295 Payscraper. Heaped capacity: 34 cu. yd. Max. speed: 29.1 mph.





International® Construction Equipment

...ional Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

...PLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled ... and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-... Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors ...pment.

For more facts, use Request Card at page 18 and circle No. 388

Textbook covers linear structural analysis

"Linear Structural Analysis," by P. B. Morice, is an introduction to the influence coefficient method applied to statically indeterminate structures. The 170-page book is designed as a college textbook and as a foundation for practicing engineers.

Chapters discuss: definitions and strain energy; influence of coefficients; indeterminacy; some properties of matrices; computation; scale factors; stress resultant distributions, lack-of-fit, and settlement; some transformations; release system relations; the flexibility matrix; and machine analysis.

The $6 book can be purchased from The Ronald Press Co., 15 E. 26th St., New York 10, N. Y.

Rust inhibitors—

Lots of protection for *little* money

Are rust inhibitors for heavy-equipment cooling systems worth using? Yes. From the standpoint of machine protection and operating efficiency, rust inhibitors help assure trouble-free operation of the cooling system and add to the life of the engine.

The protection provided by a rust inhibitor was recently demonstrated for one owner of a motor grader. After more than seven years and 11,000 service hours, the grader's engine was reconditioned for the first time. The machine had been protected with rust inhibitor since its purchase.

When six precombustion chambers were removed from the motor grader, mechanics found that the rust inhibitor had prevented mineral deposits from encrusting these and other parts that come in contact with the coolant in an unprotected cooling system. The chambers, when wiped off with a clean shop cloth, looked like new. No solvent or buffing was necessary. Yet it was the first time the chambers had been removed from the engine.

However, the real value of rust inhibitors is not measured by the "like-new" appearance of the precombustion chambers indicating a similar condition throughout the entire cooling system; rather, it is measured in terms of protection to an important and vital part of the engine.

This soluble oil-type additive, which imparts a protective oil film or lining over the entire inner surface of the cooling system, excludes rust from surfaces and insures an efficient system with full, unrestricted flow of coolant and maximum heat transfer. Even when the engine is drained for storage, the oil film remains on the surface to protect against rust.

THE END

These precombustion chambers show the value of rust inhibitors. The one above, after 11,000 service hours in a motor grader using a rust inhibitor in the cooling system, was merely wiped off with a cloth. The one below is from a rig not protected by inhibitor.

NOW... SIX Y

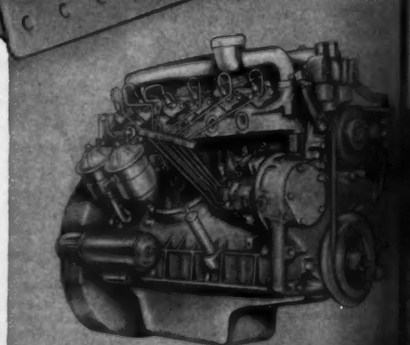
only in the NE

New TD-6 "62 series" diesel, 52 net engine hp. Operating weight (50-in. gauge), 8,665 lbs. Pulls 8,715 lbs. at rated rpm. Powers 8' 10½" Hydraulic Bullgrader shown; 1⅛ cu. yd. International Drott 4-in-1; other similar equipment. Available with 4- or 5-roller track frames. Five forward, one reverse, speeds. (Two-speed reverse, optional.)

New TD-9 "92 series" diesel, 66 net engine hp. Operating weight (60-in. gauge), 11,430 lbs. Pulls 11,720 lbs. at rated rpm. Powers 7' 11⅞" Hydraulic Bulldozer, shown; 1½ cu. yd. International Drott 4-in-1; other similar equipment. Available with 4- or 5-roller track frame. Five forward, one reverse, speeds. (Two-speed reverse optional.)

New 500-hr. lube interval TD-6 and TD-9 track rollers are of heavy-duty International design. Heavy-duty roller bushings are supplied from big 300% increased lube reservoirs. Exclusive vented shafts in top and front idlers, and in track rollers protect the seals from over-lubrication.

Millions of hours of profitable performance have proven the reliability and work capacity of the D-282 6-cylinder diesel engine. It's naturally-aspirated in the TD-6; turbocharged in the TD-9. Direct-electric started, this fast-governed performer features the most simple, efficient, and compact rotary-type fuel-injection pump built! Other D-282 long-life, low-upkeep features include: tri-metal main and connecting rod bearings; file-hard, replaceable cylinder sleeves; and extra power from every ounce of fuel energy put to work with a new super-swirl piston face.



Case history

Sealant keeps pad bolts tight on dozer tracks

Pad replacement for a tractor in the maintenance shop at the Niagara generating plant job is being done with a thread-locking sealant, called Loctite, to keep the pad bolts tight. This reduced downtime caused by frequent need for manual retightening.

Keeping pad bolts tight on the tracks of bulldozers is a construction-job maintenance problem which the Construction Department of the Merritt-Chapman & Scott Corp. reportedly solved by using Loctite sealant.

The thread-locking sealant was used on the pads of heavy equipment employed by Merritt at the Niagara generating plant at Lewiston, N. Y. Previously, because of the terrific impact that loads experienced while working on rock and frozen earth, maintenance crews had to retighten the pad nuts and bolts every two or three weeks. This meant taking the equipment out of service for half a day while two men tightened each of the 344 nuts and bolts on the large-size tracks. But, states the firm, when Loctite was applied, after 12 weeks of operations, with 132 hours of work per week, the bolts were still tight.

For further information write to the American Sealants Co., Dept. C&E, 103 Woodbine St., Hartford 6, Conn., or use the Request Card at page 18. Circle No. 12.

IX CYLINDER • smoothness • capacity • operating dividends

the NEW TD-6 and TD-9!

Now you get the smoothness, the high-production power wallop, the dependability of a fully-proven, fuel-thrifty 6-cylinder International diesel engine—only in the new TD-6 and TD-9 crawlers. This high-torque diesel has direct-electric starting; simple, compact, rotary-type precision fuel injection!

New TD-6 and TD-9 crawlers have exclusive vented shafts in track rollers, and top and front idlers, to assure positive seal protection from over-lubrication. And newly-designed track roller shells have a big, 300% increased lube capacity, to make 500-hour lube intervals a practical reality!

Both of these versatile new models have the power-transfer efficiency, and all-temperature workability of new dry-type, full-face sintered metal engine clutches. Choose from a proven line of dozers, loaders, and other equipment to take full advantage of TD-6 or TD-9 six-cylinder power!

From direct-start button to heavy-duty radiator guard, new TD-6 and TD-9 crawlers practically put their new production boosting advantages under "touch control." Let a "no-holds barred" competitive demonstration prove how easily you get their big bonus margin of earning capacity. See your International Construction Equipment Distributor!

...th, high-torque 6-cylinder diesel power make the ... TD-6 or TD-9 ideal clean-up dozer units on any sized con... or main-producing units with dozer or excavator-loader on ... sizes of jobs!

Here's the sintered metal engine clutch driven member—for TD-6 and TD-9 crawlers. New full-face design provides smooth mating of surfaces, gives the holding power and heat defiance for full-torque performance. And you get all the other advantages of dry-type clutch simplicity and low upkeep!

International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

Highway cost allocation topic of progress report

The "Third Progress Report of the Highway Cost Allocation Study"—a study undertaken by the Bureau of Public Roads—presents in summary form data on the numbers, types, and fuel consumption of motor vehicles registered, and the types, volumes, and weights of motor-vehicle traffic on the several highway systems. Forecasts of vehicles and travel for future years are included, as well as a digest of a series of studies on the economic impact of highway improvement.

The purpose of the study is to make available to Congress information on the basis of which it may determine what taxes should be imposed by the United States. This is to insure an equitable distribution of the tax burden among various classes of persons using the federal-aid highways or otherwise deriving benefits from them.

The 66-page report is available for 35 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

ACI presents four awards for designs for concrete

The southern California Chapter of the American Concrete Institute has presented awards to four winners—all students at the University of Southern California—in a student competition for outstanding designs and applications for concrete. Yin Li, a fifth-year architectural student from Peking, China, won first prize of $200 for his design for a shopping center.

Second prize of $100 was awarded to Norman Lacayo, a fourth-year student from Managua, Nicaragua, for the design of a church. Honorable mention went to Ena Dobnoff, Los Angeles, for a museum design, and to Gene Zellmer, Fresno, Calif., for a design of a zoo building.

MRBA elects officers

Ammon Schreur has been elected president of the Michigan Road Builders Association, succeeding Signor Peterson. The new president is associated with Pickitt & Schreur, Allegan, Mich. Newly elected vice president is Carl M. Krueger, of Julius Porath & Son Co., Detroit.

←For more facts, circle No. 389

Field Maintenance on a big scale

by RALPH MONSON
field editor

Maintaining the huge equipment layout for a $7,292,214 highway and railroad relocation job required a well planned, well equipped, and hard-working field service organization.

McCammon-Wunderlich Co. and Wunderlich Construction Co., Palo Alto, Calif., had just that kind of setup on the relocation of 13.3 miles of U. S. 40 and 2.6 miles of Western Pacific railroad grade bypassing the Oroville Dam site at the mouth of the Feather River Canyon in northern California.

To handle the more than 4.0 million cubic yards of earthwork, the 1.1 million cubic yards of rock, and the many other items in the big job, the contractor needed big machines and lots of them. At periods of peak production, the spread had as many as 450 to 500 items of equipment. These included 20 Cat D9 tractors, 38 Cat DW20 scrapers, eight No. 12 motor graders, 10 International TD-24's, eight D8's, four 90 scrapers, four 80 scrapers, several power shovels and cranes, a host of trucks, and hundreds of smaller pieces of equipment.

The equipment superintendent C. J. "Mac" MacAlexander, was given the job of setting up the field service facilities to keep the equipment operating. Since the job was located some 180 miles from the home shops in Palo Alto, and rigs could not economically be brought in for overhaul, a substantial part of the equipment and parts stock from the home shop was transplanted to the new service area at the job site.

A field shop. This solves the problem of maintaining a big equipment fleet in the field. The job involved relocating U. S. 40 and more than 2½ miles of Western Pacific railroad grade that bypasses the Oroville Dam site in California. Main shops are in the 60×56-foot building.

Fuel and lubricant storage. This area is located opposite the main shop facilities. Lubricants are loaded to lube trucks from the shelter; the bridgelike structure provides access to the underside of equipment. Fuel is stored in the big tanks at left. Texaco supplied all fuels and lubricants for the job.

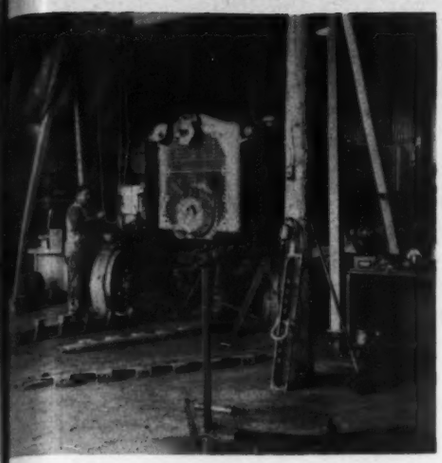
Field shop

In good weather during the construction season, much of the repair work was done right out on the job. When the winter rains started, a warm, dry shop became necessary for

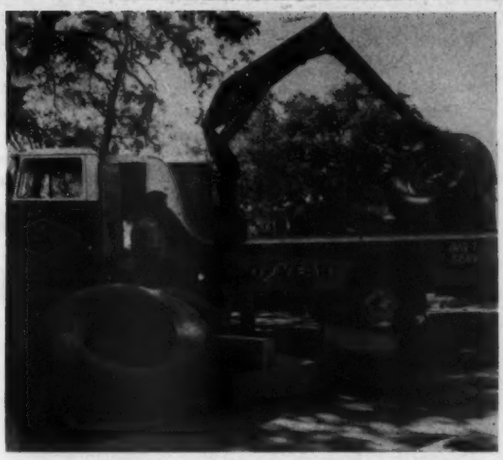
Inventory control. A continuous inventory of parts and a record of their use is contained in compact Rolodex No. 3500 rotary card files. Though dealers provided good service, the contractor minimized on-the-job delays by a good-sized inventory at the site.

Parts storage. In one of the well stocked parts vans, parts man Orville Green selects a needed item for a piece of equipment. Telephone and mobile radio keep the shop in communication with the far-flung spreads.

Special service. Big-tire service for the job is provided by Goodyear Tire & Rubber Co., San Francisco. A serviceman is using an Ingersoll-Rand air wrench, powered by a compressor on the service truck, to change a tire on an International R-190.



A Coffing gear hoist and movable overhead crane in the main shop simplify the job of overhauling this D9. The hoist is being used here to pick up one of the tractor's idlers.



The tire-service truck, an International AC-180 all-wheel-drive, is equipped with a HIAB hydraulic hoist that works almost like a powerful human arm as it picks up a heavy front wheel of a DW20.

overhaul work, and crews moved into a 60×56-foot light metal building having a concrete slab that provided a firm and dry floor.

In this shop were a number of special tools and machines, including a hydraulic press, track tools, drill presses, and Hobart and Lincoln welding generators. Two movable overhead cranes equipped with Coffing chain hoists handled the heavy parts when rigs were being torn down and assembled. A Kelite steam cleaner, located just outside the shop, removed mud, grease, and other dirt from equipment before it was brought into the shop.

To house the big supply of parts stocked on the job, the contractor used two 8×35-foot Reliance trailers fitted with bins and compartments for parts and accessories. Although distributors provided good parts service to the job, the contractor stocked a large number of the most commonly needed replacement items. At the peak of the job, the stock of Caterpillar parts alone had an estimated value of $100,000.

Caterpillar parts and service were supplied by Marysville Tractor Co. from its Marysville, Calif., store and by Crooks Bros. Tractor Co., Reno, Nev. International parts and service came from Bay Cities Equipment Co., Oakland. One-day service was usually available, but MacAlexander chose to use this service primarily for restocking his parts trailers. Enough parts were kept on hand to eliminate every possible minute of delay in making repairs.

To keep track of this big parts stock, parts man Orville Green used two Rolodex No. 3500 rotary card files. Running inventories of everything on hand were kept current at all times, and parts were reordered whenever the inventory reached a predetermined level.

The repair shops were manned by 18 mechanics, welders, and other workmen under the supervision of master mechanic P. E. "Perry" Odom. Some of these men worked regularly in the shops. Others, working from field service pickups, made repairs and adjustments right on the job. A General Electric mobile radio system with 20 or more units served well in keeping field mechanics and the shop working in close cooperation

(Continued on next page)

NOW..clam-action 4-in-1 PLUS values in NEW TD-6 and TD-9 crawlers!

NEW 6-cylinder diesel smoothness and power wallop! Both the new TD-6 and TD-9 Four-in-One's are powered with the millions-of-hours-proven, direct-starting, 6-cylinder International UD-282 diesel. Naturally-aspirated in the TD-6, it produces 55 net engine hp; turbocharged in the TD-9, it delivers 71 net engine hp!

New job-getting efficiency! Both the new TD-6 and TD-9 Four-in-One's have increased track length, for new tough-job stability and flotation. Both are geared with new speeds for greater tough-job capacity. Both have the power-transfer efficiency of new full-face, sintered metal engine clutches.

And both the new TD-6 and TD-9 have exclusive vented track-roller and idler shafts, assuring positive seal protection from over-lubrication. Big 300%-increased lube capacity shells provide 500-hr. track-roller greasing intervals!

Move the selector lever! Prove versatility unlimited of exclusive 4-in-1 as Skid-Shovel; space-saving, bottom-dumping clamshell; full-sized bulldozer; inch-close-accurate "carry-type scraper." Add up how many tens of thousands of dollars a new TD-6 or TD-9 four-in-one can save you, doubling for one limited-duty rig after another! Measure the plus value of exclusive shock-swallowing Hydro-Spring. See your International Drott Distributor for a demonstration!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

New 1⅛ cu. yd. International Drott TD-6 Four-in-One. New TD-9 Four-in-One has 1½ cu. yd. bucket capacity.

For more facts, use Request Card at page 18 and circle No. 390

(*Continued from preceding page*)

with the job supervisors.

During part of the work period, construction operations were being carried on in two locations separated by a river. While the bridge over the river was being built, it was impossible for trucks or equipment to get across. Since it was a long distance from the main field shop to the opposite side of the river by road, a temporary field shop was set up on the far side to service the equipment working there.

Lubrication

Lubrication and fueling of the equipment were handled by a separate crew under the direction of lubrication foreman Max Morelock. Using two lube trucks equipped with Ingersoll-Rand compressors and Lincoln 6-reel dispensing equipment, the four or five men of the lube crew serviced each of the major machines daily.

Rigs which could be stopped without slowing down production were serviced during working hours. The production machines were serviced during the shutdown periods for lunch, between shifts, or after the regular working day. Cars, pickups, and light trucks were driven to the lube headquarters at the service yard for such things as greasing, oil change, and fuel.

On the opposite side of the service area from the main shop, a fuel and lubrication headquarters was set up. Here, barrels of lubricants were stored on a platform in a building with one open side. The truck-bed height of the platform enabled the lube men to roll barrels on and off the lube rigs without mechanical assistance.

Using the hillside location, the contractor built a bridgelike grease rack for convenience in greasing and servicing cars and light trucks.

Fuel, stored in four 8,500-gallon tanks at the lubrication headquarters, was dispensed through power pumps. Fuel was delivered to the rigs in the field by two tank trucks, a GMC tandem with a 1,400-gallon tank and a Ford F8 with a 1,000-gallon tank. All fuels and lubricants were Texaco products.

Facilities were provided at lube headquarters for handling anti-freeze and batteries, and the lube crews provided service on these items, also.

Tire service

With a large number of rubber-tire machines on the job, the servicing and maintenance of tires was of major importance. This service was provided on the job by Goodyear Tire & Rubber Co., San Francisco. Two trucks specially equipped for big-tire service were on the site continually, and a generous inventory of new tires was maintained in a warehouse at the service area.

Typical of the specially equipped tire-service trucks was an International AC-180 all-wheel-drive truck carrying a tire-service truck body. An air compressor powered by the truck engine provided air for a variety of uses, including the operation of the HIAB hydraulic hoist. This very flexible and powerful hoist worked almost like a giant human arm as it picked tires off the ground, loaded them on the truck, and removed or replaced wheels.

The tire servicemen did a great deal more than simply change and repair tires. They kept a constant watch to detect any troubles, and these were remedied before they became serious. This aided the contractor in obtaining maximum life and usage from the tires.

Completion of this big contract well in advance of the scheduled date was undoubtedly due in large measure to the careful planning and hard work of the service crews.

Supervisory personnel on the job in addition to MacAlexander, Odom, and Morelock included project manager Floyd Helm and superintendent Harold Skeans. THE END

The Highway Trust Fund had a credit balance of $491,911,981 as of March 31, 1959.

SCPI appoints assistant

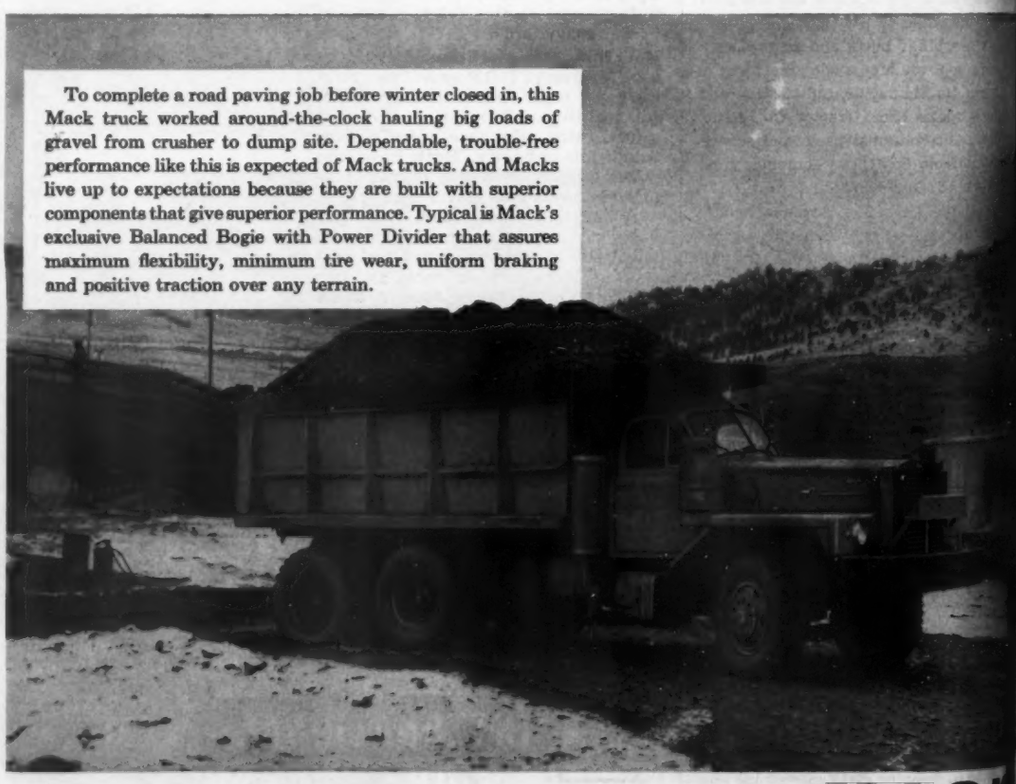
Douglas Whitlock II has been appointed assistant to the director of mason relations of the Structural Clay Products Institute. The Mason Relations Department is designed to assist the Bricklayers, Masons and Plasterers International Union in training an adequate number of bricklayer apprentices for the construction market. It also maintains close liaison with mason contractors and other masonry groups.

How MACK Performance

PAYS OFF ON CONSTRUCTION JOBS

● Here are three examples of Mack trucks working profitably in the construction field. Your local Mack branch or distributor can show you on-the-job performance reports that will help you choose the right Mack for your own operation. Mack Trucks, Inc., Plainfield, New Jersey. In Canada: Mack Trucks of Canada, Ltd.

In diesel truck sales for the sixth straight year . . . it's MACK . . . nearly two to one!



To complete a road paving job before winter closed in, this Mack truck worked around-the-clock hauling big loads of gravel from crusher to dump site. Dependable, trouble-free performance like this is expected of Mack trucks. And Macks live up to expectations because they are built with superior components that give superior performance. Typical is Mack's exclusive Balanced Bogie with Power Divider that assures maximum flexibility, minimum tire wear, uniform braking and positive traction over any terrain.

MACK

In the shop of Peterson Tractor Co., San Leandro, Calif., mechanics can rebuild a set of track rails in less than 18 hours; resurface rollers in half the time formerly required; and grind rollers in less than five minutes. L & B Welding Equipment, Inc., Berkeley, Calif., produces the machines.

Maintenance

Roller and idler rebuilder cuts work time on tractors

Four multiple-spindle roller rebuilding machines, a track-link machine, and a roller grinder have helped to increase the over-all replacement-parts business and offer more service to the customers of Peterson Tractor Co., San Leandro, Calif. The dealer's rebuilding facility, considered to be one of the largest of its kind in the country, is used exclusively for hard-surfacing rollers, idlers, and track rails.

Operating in two shifts, the company, using the L & B twin-arc wire feeders of both the roller machine and the track-rail machine, has raised production so that savings are passed on to the customers. With the track-link welder's electric eye, which reduces setup time to a matter of minutes, and twin arcs, which double the rod deposited per unit of welding time, a set of Caterpillar D8 track rails can be rebuilt in less than 18 hours.

The double-ended multiple-spindle roller eliminates the rehandling of rollers after each pass across the running surfaces. The rollers are resurfaced individually, thereby giving each roller an opportunity to cool before the next pass is applied. The average floor-to-floor time it takes to rebuild a complete set of D8 rollers is less than 50 per cent of the time formerly required with single-head machines.

The grinding of rollers, in less than 5 minutes in many cases, is being done by a special L & B roller grinder. Rollers are finished to regain their roundness and also for the sales appeal of a finished roller. THE END

Placing tons of rock and gravel at a hard-to-reach bridge site was a routine job for this Mack truck. Mack steering and braking systems give quick, sure handling under difficult conditions . . . a Mack feature that pays off in faster, safer operations. Finest material, precision manufacture, and intensive quality control go into every Mack truck, making them unequaled for handling the most demanding assignments economically and with minimum downtime.

This Mack is making an on-schedule delivery of big shovel units to a distant job site. The extra quality built into every Mack really shows up in rugged overland hauling. Their heavy-duty transmissions, for example, have ideally spaced ratios to give drivers smooth, effortless control through all speeds. Mack's unmatched performance and durability mean Macks are hauling more profit-making payloads, month after month, with time out only for routine servicing.

first name for TRUCKS

For more facts, use Request Card at page 18 and circle No. 391

Case history

Dumpers stand up well in tough mountain hauling

According to the Henry G. Gilmore Trucking Co., of Pueblo and Colorado Springs, Colo., in 28 months of mountain hauling, a 1956 Ford Model T-800 required no maintenance except for routine things such as points, spark plugs, and lubrication. States the owner, "About 120,000 miles with nothing but tuneups is what my Ford 332 engines generally do."

The firm's 24 Ford trucks, all dumps, are busy the year round stockpiling gravel, hauling gravel to mix plants, and taking hot-mix asphalt to spreaders.

For further information write to the Ford Motor Co., Dept. C&E, P. O. Box 658, Dearborn, Mich., or use the Request Card at page 18. Circle No. 122.

In a 20-acre yard at company headquarters in Jacksonville, Fla., Duval Engineering & Contracting has a maintenance setup geared for year-round operation. This is the truck repair shop, one of more than 20 specialized buildings that keep some 2,000 pieces of equipment in topnotch shape.

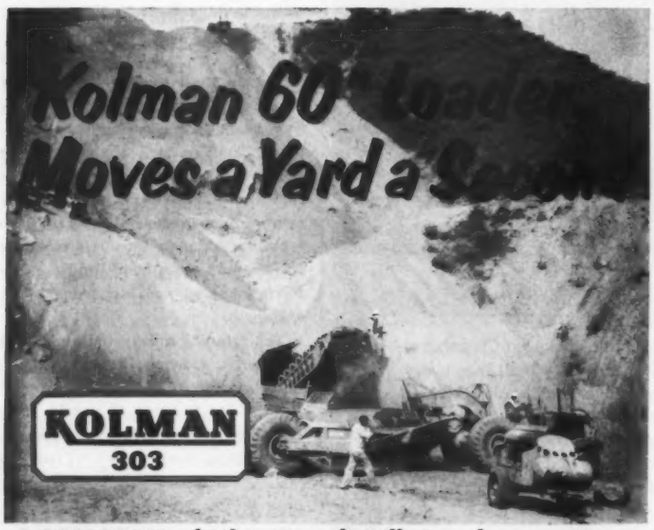
The parts warehouse, staffed by eight men, is stocked with enough replacement items for all repairs handled by the maintenance section. All major repairs are done at the Jacksonville yard; mobile shops handle field maintenance for Florida, Georgia, and South Carolina projects.

Home-Shop maintenance

The importance placed on equipment maintenance and repair is obvious at Duval Engineering & Contracting Co.'s 20-acre yard in Jacksonville, Fla.

This waterfront property, located behind the firm's main office, contains over 20 buildings that house the many up-to-date facilities used to repair, maintain, and build and rebuild the contractor's large equipment inventory. The yard was once used for building Liberty ships.

Duval, which handles contracts averaging over $10 million a year, has over 2,000 pieces of equipment and machinery, including shop and yard units. This represents a big investment, and the company's maintenance program is designed to keep this fleet rolling on the various jobs. For Duval, maintenance is not simply a job that must be done, but a vital part of company operations.



6,500,000 Yard Job in Beverly Hills Development Moves at Record Pace with KOLMAN 303 Conveyor-Loader

Cutting down high ridges and filling in canyons to construct homesites in an exclusive movie colony residential district in Beverly Hills involved moving 6,500,000 yards of rocky decomposed granite for J. A. Thompson Company, Los Angeles. The job was started with a fleet of scrapers which had to travel a mile over steep grades. The Kolman Model 303 belt loader 60" wide and 50' long was installed at the base of the high ridges. Dozers pushed material downhill to the feeder-trap, 29 feet in length, which allowed a huge live surge pile at the feed end of the unit.

Rubber tired scrapers having a capacity of over 20 yards were loaded in 17 to 18 seconds. The Kolman 303 eliminated 75% of the scrapers and tractors called for in the original estimate. The Thompson Company figures it saved the cost of the loader on scraper tires alone!

The KOLMAN 303 Belt Loader is available with wheels and tires or as a skid-mounted unit. Extra heavy duty construction throughout delivers top performance under even the most severe loads.

Kolman Portable 303 Loader. Also available as a skid-mounted unit.

SEND for FREE literature

KOLMAN Manufacturing Co.
4922 W. 12th St., Sioux Falls, S. D.

Name _____

Address _____

City _____

For more facts, use coupon or Request Card at page 18 and circle No. 393

Over 2000 authorized WISCONSIN service stations are on call if and when you need service!

Let's face it — even Wisconsin heavy-duty air-cooled engines need service and parts occasionally! This honest approach has an equally realistic stop-gap — the ever-ready network of authorized Wisconsin service stations where parts and service are available on a moment's notice. As a result, you're never caught with your engines down for long because Wisconsin service is as near as your telephone — whether your job takes you 50 miles or half-way around the world from your headquarters.

You can rely on expert service by Wisconsin-trained personnel. Most of them are graduates of periodic service clinics and are thoroughly familiar with the design, construction, and operation of Wisconsin engines. Each service station — whether it's in Fairbanks, Topeka, or Mozambique — has a stock of Wisconsin parts to assure fast delivery — to put your equipment or operation back in service with minimum delay.

Wisconsin heavy-duty air-cooled engines are known, used, and respected throughout the world. So are the more than 2000 authorized Wisconsin service stations and their work. You can rely on both to keep your jobs "on-schedule" anywhere, at any time! Write for Form S-198 which lists all the authorized Wisconsin service stations throughout the world.

WISCONSIN MOTOR CORPORATION
MILWAUKEE 46, WISCONSIN
World's Largest Builders of Heavy-Duty Air-Cooled Engines

A9-6259

For more facts, use Request Card at page 18 and circle No. 392

In the welding and blacksmith shop, a truck body is being built up and a clamshell bucket is being welded. The shop is equipped to fabricate an entire truck body. Some of the other buildings in the maintenance complex can be seen through the doors of this shop.

In this shop, a Cat D8, Cat scraper, and front-end loader are being repaired. All equipment arriving at the yard is thoroughly steam-cleaned. Once necessary repairs are made, the rigs go to the paint and body shop where dents and cuts are fixed and the equipment is painted.

Setup at contractor's 20-acre yard keeps big fleet running smoothly

One of the largest contracting organizations in Florida, Duval does the bulk of its work within the state; the remainder is in Georgia and southern South Carolina. Preventive maintenance on projects scattered throughout this territory is handled by the fleet of mobile shops and lube vans. Seven lube vans visit the various projects and—depending on the distance from Jacksonville and the amount of equipment on the project—are at times permanently assigned to the job. Any equipment needing major repairs is sent to the Jacksonville yard. Here, such things as complete motor overhaul, track and roller welding, and transmission rebuilding are handled by experienced and well equipped mechanics.

Some of the facilities housed in the permanent-type buildings include an engine shop, where gasoline and

(*Continued on next page*)

STANDARD STEEL "S-J"
Maintenance Distributor

for VERSATILITY — EFFICIENCY — ECONOMY

HANDLES ASPHALT OR TAR—FOR PATCHING—SEALING—RESURFACING—CRACK FILLING—OR SURFACING DIRT OR GRAVEL ROADS

WORKS FAST—FAR AHEAD OF THE GRAVEL GANG

Standard Steel S-J Maintenance Distributor, designed specifically for jobs where the use of bigger equipment is costly and impractical, can be moved rapidly from one location to another for patching, shoulder repair or construction of secondary roads . . . It is equipped with suck back spray bar which permits closing of the discharge valve and pulling back all surplus material in the spray bar and piping for quick cleaning . . . All piping and valves are flanged to permit easy repair or replacement . . . The draw off valve is on curb side for safety . . . and coilless self-generating burners are standard equipment as well as a Viking special asphalt pump which can be completely drained, eliminating the necessity for thawing when the unit is started cold. Write for complete details on Model S-J.

OTHER PRODUCTS OF STANDARD STEEL
ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS STREET FLUSHERS . . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS SHELVING HARDWARE AND AGRICULTURAL EQUIPMENT

Built to The Highest Standard

Standard Steel Works, Inc. NORTH KANSAS CITY, MO. 537

For more facts, use Request Card at page 18 and circle No. 394

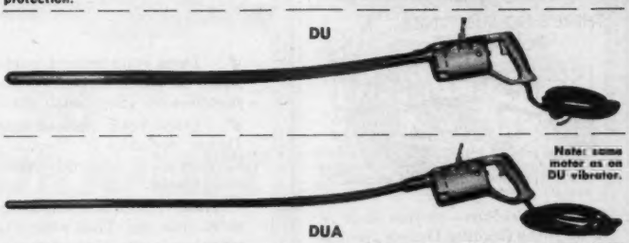
NEW MIDGET VIBRATOR
Very Versatile
7/8", 1 1/4", 1 5/8", and 2" HEADS

Stow Manufacturing Company has just put on the market a rugged, small electric vibrator that is extremely versatile. The model DU vibrator is available with either a 1¼" or ⅞" vibrator head and with various length flexible shafts from 2 ft. to 21 ft. long. These small vibrator heads really pack a wallop and are driven by a lightweight ¾-hp universal motor at 12,000 vibrations per minute.

The STOW DU Midget vibrator is shown here vibrating 1½-inch slump concrete tongue beams. Because of the small vibrator heads, the DU is ideal for jobs with narrow forms, such as precast work, vaults and manholes and on jobs where the reinforcement is closely spaced. It is also extremely useful for small jobs such as sidewalks, cellar floors, patios and swimming pools.

The DU vibrator may also be obtained with 1⅜" or 2" vibrator heads. All STOW vibrator heads have duplex ball bearings at each end supporting the eccentric weight and are sealed to retain the oil lubricant for life.

The ¾-HP universal motor weighs only 9 lbs., has a trigger switch in the handle, and features thermal overload protection.



1¼" HEAD FOR DU

⅞" HEAD FOR DUA

Ideal for narrow forms

- ¾-HP Universal motor
- Thermal Overload protection
- Operates on 115 volt AC or DC, 25 to 60 cycles
- 1¼" head standard on DU
- ⅞" head standard on DUA

For more information on the STOW DU Midget vibrator, write Stow Manufacturing Company, 40 Shear Street, Binghamton, N. Y.

Stow Manufacturing Company
Dept. J-2, 40 Shear St.,
Binghamton, New York
Please send me Concrete Equipment Cat. 580.
NAME _____ COMPANY _____
ADDRESS _____
CITY _____ STATE _____

For more facts, use coupon or Request Card at page 18 and circle No. 395

A separate shop takes care of gasoline and diesel-engine repair and overhaul. In this engine shop, one spare engine is stocked for every 8 to 10 similar engines on inventory. These rebuilt engines can easily be substituted for those needing repair so that downtime is reduced.

Rexarc track-welding and pin-pulling machines in the track and roller welding shop are used to build up the treads and roller-bearing surfaces of crawler tracks. Track rollers are also built up in this shop. ►

(*Continued from preceding page*)

diesel engines are completely overhauled and stored; and a track roller shop, which houses a contractor-built hydraulic press, a drillpress, a washing table, and a boring machine to correct any distortion that may occur from welding. A spare engine is stored in the engine shop for every 8 or 10 similar engines on inventory. Cylinder heads, including the installed valves, are wrapped in waterproof paper and stocked in the shop to be used in rebuilding motors.

This stockpiling of spare engines for every 8 or 10 on inventory makes it possible for the workload to be spread throughout the year in this area, where there is no slack time in construction activity. Equipment downtime is also reduced, for faulty engines can be swiftly replaced with completely rebuilt units. When an engine is removed, it is completely overhauled, rebuilt, and stored for future use. A crankshaft is also kept on hand in the engine shop for every type of engine stocked.

In another building, Rexarc track welding machines and track pin pullers are used to build up worn tracks and rollers. A pump repair shop, equipped for complete pump overhaul, is housed in still another building where rebuilt units are stored until needed in the field.

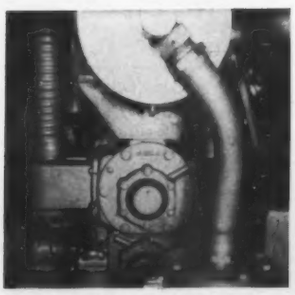
Builds truck bodies

The building or repairing of worn-out steel truck bodies is handled by the welding and blacksmith shop. The shop also handles repairs of the many different types of crane and shovel buckets.

Other facilities in the yard include a body repair and paint shop; a tire shed, where all types, sizes, and makes of tires are stored; a warehouse, where enough items are stocked to handle all repairs at the yard; and a barge-building area, where all the company's steel barges are built and launched.

Equipment in need of repairs is shipped to the yard and washed and steamed before being sent to the proper shop area. Available replacement parts on hand are used in repairing a rig. But if a spare generator is not available, for instance, the unit's generator is rebuilt and reinstalled. Once a piece of equipment is ready to roll, it is sent to the body and paint shop where dents and cuts are repaired and painting is done.

Can your present portable pass this vital double-value check?



Gardner-Denver rotaries require no major dismantling job for inspection of working parts. Only a few minutes are required to remove the 12 cap screws to expose all the rotor blades for routine inspection or replacement that assures trouble-free operation.

The Gardner-Denver RP125 is built with extra tool storage space. Big, weather-tight toolbox provides safe storage for tools, steel and hose.

THERE'S NO SUBSTITUTE FOR MEN

In construction—on jobs large or small—the Gardner-Denver specialist is trained to assist in solving your air equipment problems. He can help you minimize down time and lost production. At Gardner-Denver *there's no substitute for men*—our 100-year philosophy of growth.

✓ Does your present portable air compressor have parts within easy reach for quick inspection and maintenance on the job? *Gardner-Denver portables do.* (See photo above.)

✓ Does your present portable offer top fuel economy? *Gardner-Denver portables do.* Exclusive "THRIFTMETER"® control matches air output to demand—saves fuel, saves wear and tear on engine and compressor.

These values are important on any job where air power helps keep work moving. That's why Gardner-Denver builds these features into *all* rotary portables—large and small alike.

Furthermore, Gardner-Denver RP125 and larger compressors have a clutch and water-oil cooling system for easy, all-weather starting. Engine water warms up compressor oil before clutch is engaged.

If your present portable doesn't measure up to all these cost-cutting values, take a look at Gardner-Denver. Get all the details from your Gardner-Denver distributor.

GARDNER-DENVER Since 1859 100 1959 YEARS

EQUIPMENT TODAY FOR THE CHALLENGE OF TOMORROW

GARDNER-DENVER

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd., 14 Curity Avenue, Toronto 16, Ontario

For more facts, use Request Card at page 18 and circle No. 396

This is the paint and body shop—the last stop for pieces of equipment before they are sent out to work again. From here, rigs go to the yard to wait assignment to a project. Just behind the building is the base of the 160-foot communications tower for the contractor's radio system.

The machine is then stored in the yard to await shipment to another project.

Records maintained

Keeping the movements of this huge equipment fleet coordinated requires an uncomplicated inventory control and constant check by the equipment superintendent. A Kardex file on each piece of shop or field equipment is kept at the yard office; it shows name, make, and model number of the machine, a complete list of accessories and important parts, original cost, and any information required in order to make emergency repairs.

Another set of cards maintained at the main office does not have such a comprehensive parts listing, but it shows equipment assignments, locations, and cost of operation.

When a new job has to be equipped, the general superintendent, job superintendent, and the engineering department determine the equipment that will be needed and submit the list to the equipment section. Here, an attempt is made to fill the job requirements with equipment stored at the yard. If this does not meet all requirements, a check is made to see if any machines can be released from active projects.

When these avenues cannot provide the needed equipment, and substitutions are not possible, the contractor purchases new equipment. New equipment is also bought whenever a particular machine has become obsolete and whenever the maintenance and operating costs have risen to a point that makes continued use of the machine uneconomical.

James H. Hudgens is superintendent in charge of maintenance, repairs, and transportation for Duval Engineering. Joe Clark is assistant superintendent of shop and field maintenance, and J. A. Rawls is assistant superintendent in charge of shop heavy-duty equipment, maintenance, and repairs. THE END

Canton Mfg. appoints

Randall K. Ream has joined the Canton Mfg. Co., Canton, Ohio, as national sales manager. The company produces and distributes a complete line of Loadbinders for hauling and handling steel, pipelines, and machinery.

U. S. Steel division plans plant expansion

Two new buildings will be erected at the Ellwood Works of the National Tube Division of U. S. Steel Corp., Pittsburgh. This plant is located in Ellwood City, Pa. The buildings, of rigid-frame steel construction, will house 40,000 square feet of space for processing, finishing, and testing equipment for stainless-steel tubing.

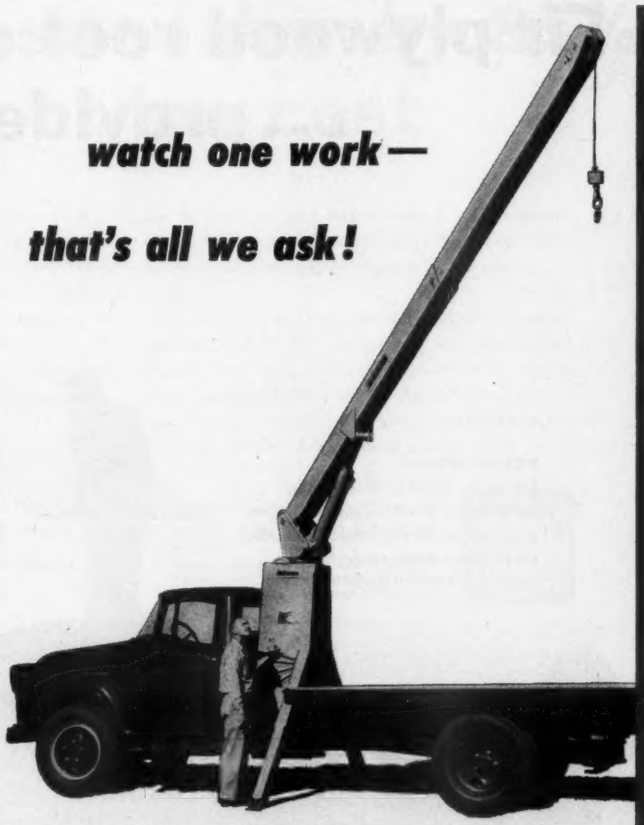
Bridge authority offers map of Hudson Valley

A road map of New York's historic Hudson Valley has been issued by the New York State Bridge Authority in commemoration of the 350th anniversary of Henry Hudson's epic journey up the river aboard the ship Half Moon. The map shows the entire Hudson Valley and lists 31 places of historic and scenic interest.

Free copies of the map may be obtained from the authority, Bridge Plaza, Poughkeepsie, N. Y.

PCA elects new member

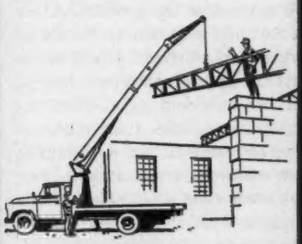
The Portland Cement Association has elected the Arkansas Cement Corp., subsidiary of Arkansas Louisiana Gas Co., Little Rock, to membership in the organization. The new member joins more than 70 other cement manufacturers in the United States and Canada, who finance a program to improve and extend the uses of portland cement and concrete.



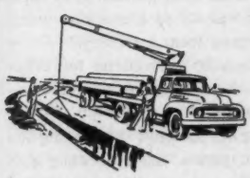
New Model 50 PITMAN HYDRA-LIFT

Words are words, but actual performance is the only thing that really counts. How fast can it lay pipe, load paving forms, set steel. Is there really a saving in time and labor. We've put the Model 50 to work on jobs like these and many others. Now, we'd like to prove to you what we found out. Why not fill out and mail the coupon below today. Let us send you literature, then arrange for a demonstration. No obligation on your part, and the savings could be tremendous.

PLENTY OF BED SPACE for these paving forms, which Model 50's swinging boom sets on and off the bed quickly, easily. Boom swings full 360°, can be carried either over the bed or over the cab.



HYDRAULIC TELESCOPING BOOM* is ideal for setting steel. Controls on each side of truck assure operator perfect visibility. Every operation of Model 50 is hydraulic, including placement of outriggers.
*Also available with fixed boom (12') or manually telescoping boom (12' to 20').



LIFTS UP TO 5000 LBS., yet requires only 25" behind truck cab. On a tractor-trailer, Model 50 loads the trailer, moves with the load to the job and is ready to string and lay the pipe.

NEVER IDLE—Once you own a Model 50 you'll find it's never idle, and every minute it's working it's saving you money. Model 50 is available for installation on any make truck, 1½ ton or larger, new or used.

PITMAN Manufacturing Co. Grandview, Missouri

Please send me literature ☐
I am also interested in a demonstration ☐

Name_____

Company_____

Street_____

City_____ State_____

Pitman also manufactures:

Hydra-Lift Model 60HB with Pitman Carrier

Hydra-Lift Model 60

Pitman
MANUFACTURING CO.
Grandview, Missouri

For more facts, use coupon or Request Card at page 18 and circle No. 397

Equipment industry asked for help on downtime problems as contractors

Sound off on maintenance

Contractors' number one maintenance problem—according to replies to CONTRACTORS AND ENGINEERS' Research Department survey— is faulty lubrication. The human element, as might be expected, was cited repeatedly as the chief contributor to the problem. "Carelessness," "Failure to use oil and grease freely," and mechanics and operators who "do not know the proper maintenance procedures" were typical replies.

The president of an upstate New York blacktop paving firm put it this way: "Poor lubrication is mostly caused by employees' lack of interest. There is no contractor who is not glad to buy grease, oil, and wrenches. It is very hard to hire Phi Beta Kappa men for our type of work." A small Iowa excavating and grading contractor replied: "It is very difficult to keep good personnel that we can depend on to do this [lubrication] job. Better lubrication equipment and more wages for lubrication men may be the answer."

But while some contractors seem to call for better work from their men as a solution to the problem, others felt that lube requirements should be clarified and simplified. As one South Carolina paving contractor put it, "Oil! We have and get as much information as possible from manufacturers of engine oil, but we obtain so much conflicting information that we often don't know what to use or who is right or wrong."

Ambiguous lube instructions are another source of trouble. One equipment manager of a multimillion-dollar Missouri firm says that "it would be of tremendous help if manufacturers stated what product is in various components of a machine when it is shipped from a factory."

Contractors' suggestions for overcoming the lubrication problem included these:

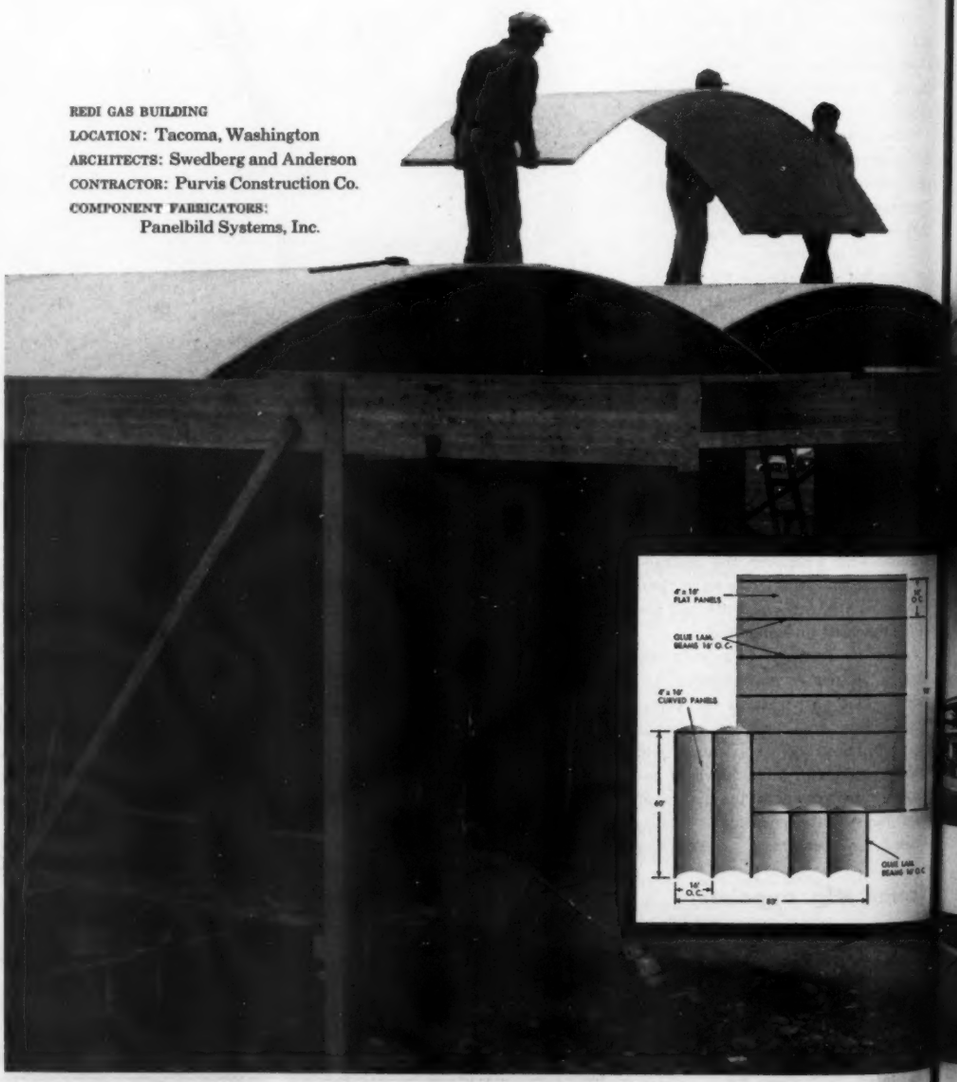
- Simplify systems, eliminating lubrication points when possible, and require fewer types of lubricants.
- Coordinate sizes of grease fittings on one machine.
- Make parts accessible.
- Develop assemblies that will not require lubricants or that are sealed with lifetime lubricants.
- Develop small compressors operating from battery or PTO, that can be used in servicing points that require daily lubrication.
- Provide automatic lubrication systems.
- Supply gummed stickers, made by manufacturers or oil companies, with every machine as oil-change records: one a daily-check sticker, the other carrying a list of lubrication points that need less frequent attention. These would replace lubrication and maintenance booklets, which are too easily lost or ignored.
- Rivet greasing charts to every new machine and, if possible, mark grease fittings.
- Use larger, clearer drawings and better descriptions in parts books.

Winter work

Cold-weather starting and operation also came in for comment. One contractor, whose front-end loader was difficult to start in cold weather, turned to the use of ether, rather than a booster battery, which was inconvenient. The air cleaner was loosened so that ether could be inserted in the engine, and either the clamp was not retightened because of an oversight or else it became loose through vibration. This resulted in the complete failure of the engine in a little less than 800 hours of operation. The contractor felt that cold-weather starting procedures could be remedied by proper fixtures for inserting ether at a position more local to the air manifold.

Fir plywood roof component...provide large cle

REDI GAS BUILDING
LOCATION: Tacoma, Washington
ARCHITECTS: Swedberg and Anderson
CONTRACTOR: Purvis Construction Co.
COMPONENT FABRICATORS: Panelbild Systems, Inc.



A survey of contractors' maintenance problems by the Research Department of CONTRACTORS AND ENGINEERS *shows the troubles to be rooted in four main categories—lubrication, winter operation, parts service, and equipment design. Of the 544 contractors responding to the survey, 256 (47 per cent) reported one or more maintenance difficulties. If the replies can be summed up into one viewpoint, it is this: contractors would like to see a more comprehensive approach to solving these problems. Here are some of the biggest maintenance problems, together with what the contractors thought manufacturers and dealers might do to help solve them.*

Other contractors left little doubt that cold-weather operating difficulties were a major cause of downtime. Suggested solutions to the problem covered a wide range:

- Make a better ether-injecting system.
- Use electrical heating units as starting aids.
- Construct carburetors better so that they will stay in adjustment for at least three or four months.

Parts service

Parts availability was another sore spot with contractors. One said: "Our main trouble is getting the right parts when we need them. Most of the dealers do not stock enough parts of the right kind. We also have trouble with parts departments mixing up numbers and ordering wrong parts." And this reply was echoed by many others.

Difficulty in locating parts for old-model machines was also mentioned as a tough maintenance problem, as was the job of keeping track of parts. A suggested remedy for the latter problem was the establishment of a system to make it easier to keep tabs on individual items.

Equipment design

Many contractors said, in effect, that good maintenance begins on the equipment designer's drawing board, and they suggested improvements in design and construction. Here are some of their ideas:

- Design equipment so as to simplify servicing.
- Design units that can be easily removed for replacement or servicing without dismantling the machine.
- Improve grease seals.
- Use cast steel or steel fabrication instead of cast iron, so that welding can be easily done.
- Devise an easier means for one man to raise or lower corners of angledozers; smoother brake-band adjustment and operation on cranes and backhoes so that cable can be pulled off drums without loosening adjustments; a simpler method to remove table rollers; a better grease and oil-retainer arrangement for drum and boom hoist shafts.
- Use plastic-lined metal hose, similar to aircraft-type flexible metal hosing, for hydraulic units.
- Develop a better method of rebuilding grousers and inexpensive shovel dippers.
- Supply more interchangeable parts; make one power unit capable of doing and handling several different jobs without the need for spending too much money and time in changing over.
- Provide bigger and more efficient air cleaners for engines, and better sealing of component parts on equipment, in order to combat the dirt problem.
- Devise a method so that the wearing surface of high-abrasive alloy on the roller mechanism of tractors could be changed without replacing the base metal of the part.

Other contractors wanted heavier clutches, suitable to today's heavier construction machinery and more accessible for repair, adjustment, and lubrication. There was also a demand for some means of checking clutches before damage occurs, and for heavier transmissions, particularly final drives. Truck improvements wanted were: bigger clutches, transmissions, and universal joints to match increased horsepower; better body bracing; stronger springs; securely mounted fenders.

Another suggestion: build up side walls of heavy-duty grader tires with a heavy bumper strip of rubber. This would protect the side walls against damage during ditch work and would keep them from failing long before the tread begins to wear.

As far as engines are concerned, there were suggestions for better ignition systems, heavier wiring, more efficient oil cleaners, and improved oil filters.

The solutions to some of the problems of lubrication and winter operation lie with many individual contractors. As for the remainder, many of them are high on the list of "problems to be solved" by progressive manufacturers, who long ago instituted continuing long-range product-research and field-testing programs.

THE END

educe on-site labor by 85%
loor areas at low cost

FIR PLYWOOD COMPONENTS helped speed and simplify roof construction on this striking office-display-warehouse building. The multiple arch roof in the front of the building is composed of curved stressed-skin panels, each 4 feet wide, spanning 16 feet; the rear of the building is roofed with 4 x 16 foot flat stressed-skin panels. Both combine roof decking insulation and finish ceiling in one easily handled component.

In addition to reducing on-site labor by about 85%, the fir plywood roof components provide superior structural values and permit large clear floor areas without supplementary support from purlins or trusses.

The in-place cost of the flat stressed-skin plywood panels came to 79c per square foot, the curved panels, $1.10 — or about 10 per cent less, locally, than comparable joist or truss construction providing the same clear floor areas with conventional decking, insulation and finish ceiling.

For more information about fir plywood—its uses and advantages—write (USA only):
DOUGLAS FIR PLYWOOD ASSOCIATION
TACOMA 2, WASHINGTON
—an industry-wide organization devoted to research, promotion and quality control

Always specify by DFPA grade-trademarks

DFPA TESTED QUALITY

Multiple arch roof composed of curved components creates unusual and attractive profile. Panels have 5/16" upper, 1/4" lower plywood skins glued to 3/4" honeycomb paper core, with 1 x 3 framing.

Flat stressed-skin panels used on rear section of the building have 1/2" upper, 3/8" lower Exterior fir plywood skins glued to light lumber framing.

For more facts, use Request Card at page 18 and circle No. 398

Cleaning, sandblasting, spray painting are year-round maintenance job for this

Three-section refinishing setup for heavy-duty construction rigs

A spray painter in the refinishing department of Chicago Bridge & Iron Co. inspects a newly painted generator. The three-section department consists of a sandblasting room, left; the Binks spray-painting booth, center; and the steam-cleaning room.

A unique three-section refinishing department for cleaning and painting heavy-duty construction machinery replaces a hit-and-miss system of outdoor spraying—weather permitting—and unsatisfactory and unventilated indoor spraying at Chicago Bridge & Iron Co.'s Chicago Erection District.

The refinishing department is located in the 80,000-square-foot repair and maintenance warehouse. The warehouse is divided into three areas: the west end is for small-tool repair; the east end, for major repair work; and the middle for refinishing.

The three-section refinishing department consists of a steam-cleaning room, a sandblast room, and a spray-painting booth. The first two rooms, of concrete-block construction, measure about 20×16×45 feet. The spray-painting booth, manufactured by Binks Mfg. Co., Chicago, measures 40 feet long, 15 feet 8 inches high, and 15 feet 4 inches wide. It is made of prefabricated metal with 14 openings in the ceiling for lighting and openings at the rear wall for filtering and exhaust.

Access to the refinishing department can be had from either shop No. 2 or No. 3. Both of these shops are equipped with overhead traveling cranes, either of which can spot machinery that needs refinishing.

After mechanics are through with a piece of equipment, it is picked up by the overhead crane and moved to

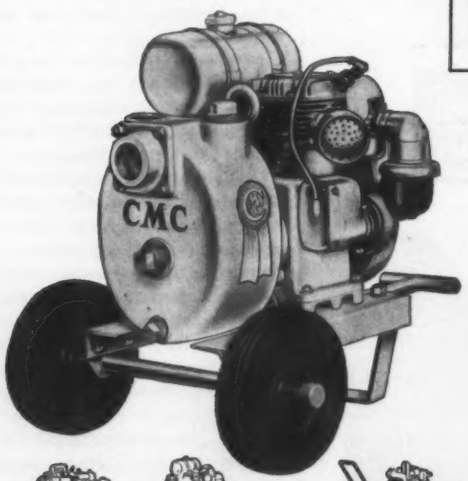
you name the job

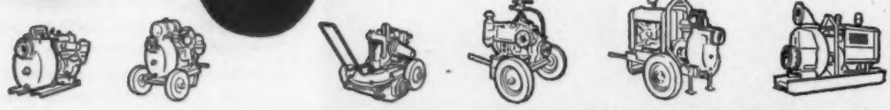
here's 50 ways to faster, more dependable, lower cost water handling ... every time!

CMC

Golden 50*

PUMPS





* The very ultimate in pumps . . . our golden anniversary line. **50 versatile models** . . . 4,000 gph to 240,000 gph.

The greatest TIME, WORK, MONEY-SAVING FEATURES ever put in a pump! Permex self-lubricating ceramic seal; Hydro-Jet high efficiency, non-clog impeller; self-cleaning case; unitized construction.

There's a type and size CMC "GOLDEN 50" to fit every need . . . at a price to fit every pocketbook. **DUAL PRIMERS — 1½" to 10"; DIAPHRAGMS — 2", 3" & 4"; HI-PRESSURES — 2" to 6".**

SOLD & SERVICED BY AMERICA'S BEST DISTRIBUTORS

GET THESE LATEST PUMP FACTS AND SAVE MONEY!

Contact your local CMC distributor . . . or WRITE FOR NEW CMC "GOLDEN 50" PUMP CATALOG. Fully illustrated, gives complete details . . . makes it easy to select the right pump for the job.

OUR 50th YEAR 1909-1959

Transit mixers · Building mixers · Central plant mixers · Hoe type mixers · Hoists

CONSTRUCTION MACHINERY CO. • WATERLOO, IOWA

For more facts, use Request Card at page 18 and circle No. 399

NEW

TROUBLE-FREE STEAM CLEANER

The Turbo Steam Cleaner is made for continuous rough service. It takes care of all cleaning, degreasing, paint-stripping and phosphatizing jobs faster, better and cheaper than any other steam cleaner. Quickly pays for itself: Low fuel consumption; detergent savings; low maintenance. Simple construction. Many automatic safety features. Nothing cleans like steam and no steam cleaner cleans like a Turbo. Oil-fired and electric models. Send for illustrated folder.

TURBO STEAM CLEANERS

TURBO MACHINE COMPANY
LANSDALE, PA.

For more facts, circle No. 400

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or $110,10
marked up

the back entrance of the steam-cleaning room. Here, it is placed on a rail-mounted dolly, which resembles a railroad handcar, and pushed into the steam-cleaning room. After it is cleaned, the machine is pushed out the other end of the steam room, and the shop No. 3 crane moves it to the sandblasting room.

The machine is sandblasted to remove all or most of the old paint, grease, and rust. The metal is also etched to provide better paint adhesion. After the sandblasting operation, the equipment is rolled out of the room, and the crane moves it to a dolly on tracks leading into the spray booth.

In the booth, everything, from trucks to generators, is painted forest green. Except for electrical connections, all parts of the various units are painted.

Spray booth

The prefabricated spray booth and exhaust system was delivered to Chicago Bridge & Iron ready for assembly. Included in the package were 28 vaporproof ceiling lights, air filters, exhaust fan, and ducting.

Ceiling lights are mounted in 2×5-foot apertures behind shatterproof wire glass. The 34-inch exhaust fan, powered by a 5-hp motor, is mounted in a duct above and behind the booth. Air is drawn in the open front end of the booth, past the spray painter, and through spun-glass air filters in the back wall. Overspray is collected by the filters, and fumes are carried through the duct and exhausted in open air above the warehouse. The actual painting area is relatively free of paint-laden air.

Chicago Bridge & Iron uses a 10-gallon Binks pressure tank as a supply source for paint. The pressure tank is equipped with an air-driven agitator to keep the paint well mixed when spraying. Spray painters use a Binks Model 7 heavy-duty spray gun.

Among the many advantages of the refinishing system is one that had not been anticipated. Before the sandblast and spray-booth setup was installed, it had been the practice to hand-paint heavy-duty cranes and hoists. Some of this equipment had accumulated as much as 30 mils of paint, a lot of dead weight to carry around. Now, sandblasted to bare metal and painted in the spray booth, they come out looking like new equipment.

THE END

Net revenue from operations of the Kansas Turnpike in March reached $311,163.90, a 55 per cent increase, or $110,103.20 over the $201,060.70 marked up March of 1958.

Chicago Pneumatic buys assets of Reich Bros.

Chicago Pneumatic Tool Co., New York City, has purchased the assets of Reich Bros. Mfg. Co., Inc., Terre Haute, Ind., producers of truck and crawler-mounted hydraulic rotary blast-hole drills and drilling rigs for down-the-hole blast-hole operations. The purchase also includes Reichdrill Mfg. Co., Ltd., Glasgow, Scotland.

The acquired company will be known as the REICHdrill Division, Engineering and production operations will remain in the Terre Haute plant, and all sales and manufacturing will continue in Glasgow. There are no personnel changes.

Traffic accidents on U. S. highways during 1958 caused more than 2,825,000 injuries, although deaths decreased 5 per cent, according to statistics compiled by The Travelers Insurance Companies.

10-TON LOW DECK TILT TRAILER

Professionally Engineered ONE-MAN OPERATION

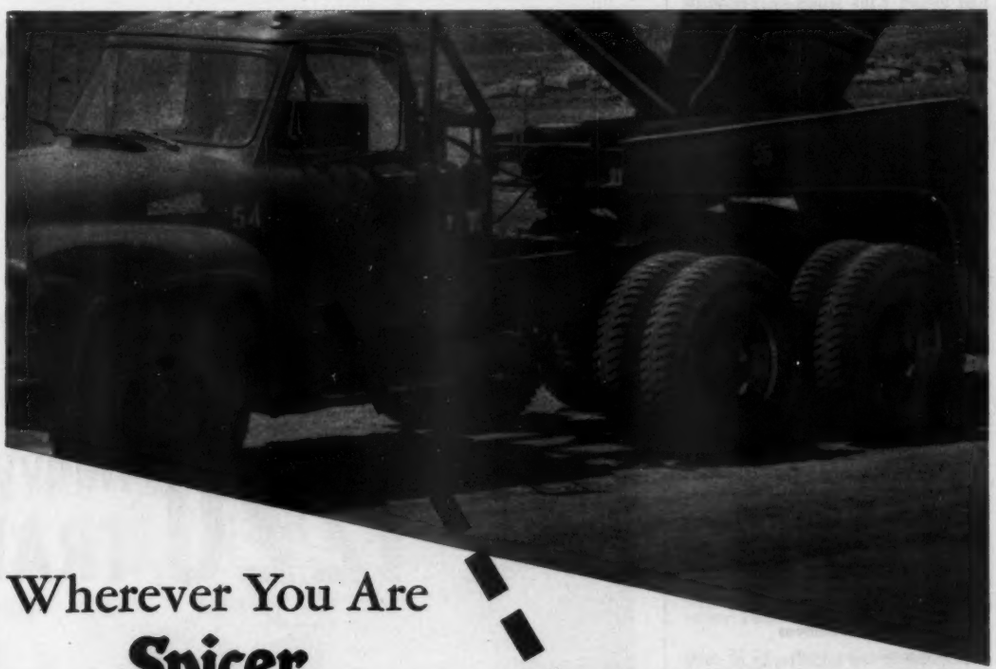
Model 1020—Only $1525.00 fob factory w/tires & deck.

One-man "Easy Up-Easy Down" automatic hydraulic tilt deck, only 24" high. Low load angle. No skids or blocks needed. Perfect for D-4, HD-5, TD-9, OD-12, HD-6G, 955 or roller. Exclusive breakdown proof rear deck channel mounting. Extra strong frame perfectly balanced. One man can hook trailer to truck. Wiring enclosed. Chosen by comparison. Other models 3 to 16-ton available.

Write for catalog, prices, and name of nearest distributor.

WISCONSIN TRAILER CO. 1949 N. 121st St., Milwaukee 13, Wis.

For more facts, use Request Card at page 18 and circle No. 401



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Spicer
Is There With
The Right PTO

When time is important . . . think of Spicer. Even if you're on site, your Spicer distributor is as close as the nearest telephone.

Across the nation, your Spicer distributor carries a complete line of all types of PTOs for quick replacement, plus all the joints and shafts you need for a complete auxiliary power installation. Ask your distributor about the Spicer line, or write Dana Corporation, Toledo 1, Ohio.

DANA CORPORATION • Toledo 1, Ohio

DANA PRODUCTS Serve Many Fields:

AUTOMOTIVE: Transmissions, Universal Joints, Propeller Shafts, Axles, Powr-Lok Differentials, Torque Converters, Gear Boxes, Power Take-Offs, Power Take-Off Joints, Clutches, Frames, Forgings, Stampings.

INDUSTRIAL VEHICLES AND EQUIPMENT: Transmissions, Universal Joints, Propeller Shafts, Axles, Gear Boxes, Clutches, Forgings, Stampings.

AVIATION: Universal Joints, Propeller Shafts, Axles, Gears, Forgings, Stampings.

RAILROAD: Transmissions, Universal Joints, Propeller Shafts, Generator Drives, Rail Car Drives, Pressed Steel Parts, Traction Motor Drives, Forgings, Stampings.

AGRICULTURE: Universal Joints, Propeller Shafts, Axles, Power Take-Offs, Power Take-Off Joints, Clutches, Forgings, Stampings.

MARINE: Universal Joints, Propeller Shafts Gear Boxes, Forgings, Stampings.

Many of these products manufactured in Canada by Hayes Steel Products Limited, Merritton, Ontario.

DANA Spicer

For more facts, use Request Card at page 18 and circle No. 402

This Euclid 63-TDC end-dump truck, part of a fleet that ran 2,100 hours and had virtually no deposits in the engine cylinders, used Supplement 1 level oil, which has a high detergency level.

Lubrication schedule helps rigs to give

Top job performance under rugged conditions

When a maintenance check was made on four new end-dumps that had logged 2,100 hours of service in quarry hauls, the engine showed almost no deposits or sludge, and the exhaust ports were not clogged up. This good showing was credited to the lubrication and fueling maintenance setup for the equipment.

The lubrication maintenance test had a high degree of control, for Marion Williams, superintendent of the Pomona quarry of the Superior Stone Co. near Guilford College, N. C., ran it on four new Euclid 63-TDC's. Williams began his maintenance program when permanent equipment arrived at the quarry. Aside from the trucks, the equipment included in the program consisted of two Northwest shovels, a Marion shovel, a Caterpillar D7 bulldozer, a Lippman jaw crusher, two Nordberg-Symons cone crushers, the usual assortment of towers and conveyor belts, and an Ingersoll-Rand rotary flow 900 air compressor with General Motors diesel engine.

Site conditions

Because of the importance of fuels and lubricants in maintenance, Williams had a petro-engineering service make a comprehensive survey of the equipment and draw up a fuel and lubrication chart that would consolidate the various types of petroleum products recommended by equipment manufacturers. This would insure proper lubrication, reduce the possibility of using the wrong lubricant for a given application, and reduce purchasing and storage problems.

The most severe lubricating conditions were imposed on the trucks hauling granite. The "Eucs" had to operate under extreme conditions—they carry 22 to 23 tons of granite, plus their own weight of 24 tons, up a 15 per cent grade from the quarry floor to the crusher hopper every 15 minutes, 7½ hours per day. In between the overloads, the engines idle while the trucks are being loaded and emptied. And excessive idling can lead to engine deposits.

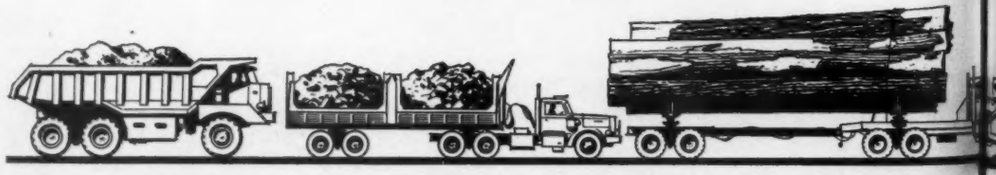
There are no garages for the "Eucs." Even on a summer night, condensation takes place, and the water in the oil has a tendency to deplete whatever additives the oil may have and take away its detergency action.

NEW,
RUGGED...
HI CAPACITY...

5-G-1220 Heavy-Duty, 5-Speed TRANSMISSION

LONGER LIFE *with pressure filtration and lubrication*
EASIER SHIFTING *with countershaft brake*

...for TOUGH



The Fuller model 5-G-1220 Transmission is engineered for heavy-duty operation in big earthmoving, logging, mining and quarrying equipment, including prime movers pulling scrapers of 12 to 14 cubic yards capacity. This new model is also designed for off-highway service in trucks equipped with engines of equivalent torque and horsepower.

Model 5-G-1220 offers higher capacity than other models in the '1220 series previously produced through elimination of axial thrust factors by the use of spur type gearing throughout the unit. As standard equipment

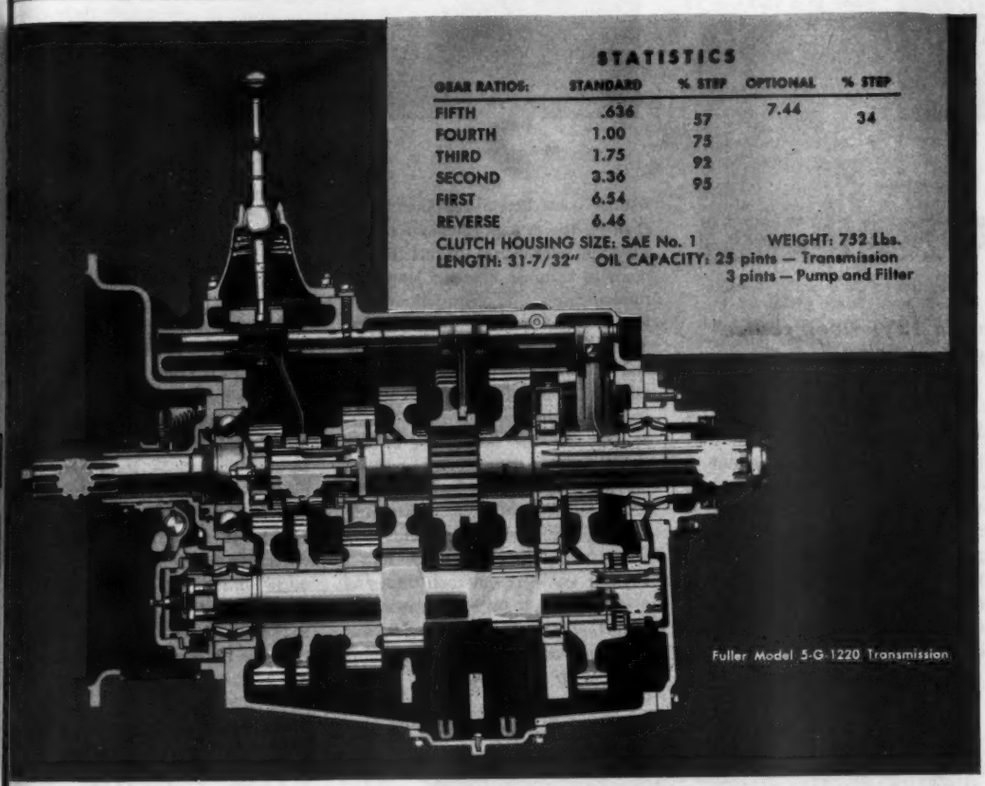
Unit Drop Forge Div., Milwaukee 1, Wis. • Shuler Axle Co., Louisville, Ky. (Subsidiary) • Sales & Service, All Products, West. Dist. Branch, Oakland 6, Cal. and Southwest Dist. Office, Tulsa 3, Okla.
Automotive Products Company, Ltd., Brock House, Langham Street, London W.1, England, European Representative

In addition to this, the engines are up against dusty operating conditions. The fine granite dust from the rock crushers works even past a good air filter into all parts of the engine.

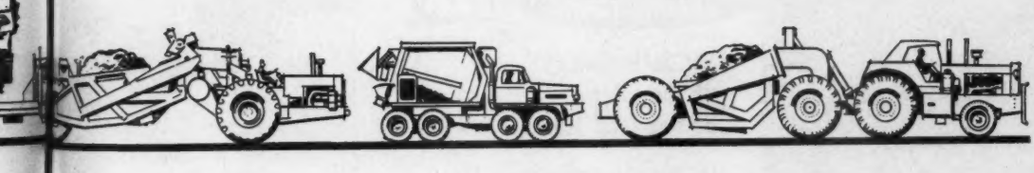
Lubrication engineers, sent by the Gulf Oil Corp., recommended that the Euclids use a Supplement I level oil. This oil has a higher detergency level than the general H. D. oils, so that dirt and dust are held in suspension instead of being allowed to form sludge.

At the end of 15 months of this intermittent overload service, the four Euclids had logged 2,100 hours. A spot check was made. Everything was clean; there were almost no deposits, a negligible amount of sludge was present, and exhaust ports were not clogged up. THE END

Case history: An Ulrich Model T-40 trench filler and shoulder spreader, attached to a Caterpillar No. 12 motor grader, was working at less than 50 per cent of capacity when receiving approximately 78 tph of hot-mix asphalt, reports the Dobson Bros. Construction Co., of Lincoln, Nebr. The job involved spreading asphalt 4 feet wide and 2 inches thick on the shoulder of the new interstate highway near Gretna, Nebr. For further information write to the **Ulrich Mfg. Co.**, Dept. C&E, Roanoke, Ill., or use the Request Card at page 18. Circle No. 130.


STATISTICS
GEAR RATIOS: STANDARD % STEP OPTIONAL % STEP
FIFTH .636 57 7.44 34
FOURTH 1.00 75
THIRD 1.75 92
SECOND 3.36 95
FIRST 6.54
REVERSE 6.46
CLUTCH HOUSING SIZE: SAE No. 1 WEIGHT: 732 Lbs.
LENGTH: 31-7/32" OIL CAPACITY: 25 pints — Transmission
3 pints — Pump and Filter
Fuller Model 5-G-1220 Transmission

ff-highway service!



on the 5-G-1220, the following innovations are featured:

1. Pressure lubrication and filtration system;
2. Countershaft inertia brake.

The pressure lubrication and filtration systems provide positive lubrication of the mainshaft pilot bearing and mainshaft gear bushings, keep the gear oil clean between changes, and prolong gear and bearing life. The air powered countershaft brake, which is activated simply by pushing a button, permits quick upshifts without double clutching.

Both high production and reduced operating costs for off-highway jobs can be secured by using the 5-G-1220 Transmission. Ask your equipment dealer for further information about this unit, or write directly to the Fuller Manufacturing Company, Kalamazoo, Michigan.

FULLER TRANSMISSION DIVISION
MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN
Subsidiary EATON Manufacturing Company

For more facts, use Request Card at page 18 and circle No. 403

Convention calendar

June 17-20 National Society of Professional Engineers
Annual Meeting, Commodore Hotel, New York, N. Y. C. L. Ritchie, NPSE, 2029 K St. N. W., Washington, D. C.

June 19-21 Maryland Association of Engineers
Convention, Commander Hotel, Ocean City, Md. Ottavio E. Grande, MAE, 3633 Chesterfield Ave., Baltimore 13, Md.

June 21-26 American Society for Testing Materials
Annual Meeting and Exhibit, Chalfonte-Haddon Hall, Atlantic City, N. J. ASTM, 1916 Race St., Philadelphia 3, Pa.

June 24-25 The Asphalt Institute
Mid-year Meeting, Hotel del Coronado, San Diego, Calif. The Asphalt Institute, Asphalt Institute Bldg., University of Maryland, College Park, Md.

June 29-July 1 American Society of Landscape Architects
Sixtieth Annual Meeting, Palmer House, Chicago, Ill. Arthur Fitzgerald, general chairman, ASLA, 1119 Pine St., Glenview, Ill.

June 29-July 1 School for Highway Superintendents
School, Riley-Robb Hall, Cornell University, Ithaca, N. Y. James W. Spencer, highway research and extension engineer, SHS, Department of Agricultural Engineering, Riley-Robb Hall, Cornell University, Ithaca, N. Y.

July 25-29 National Association of County Officials
Twenty-third Annual Conference and Products Exhibit, Sheraton-Cadillac and Statler-Hilton Hotels, Detroit, Mich. Bernard F. Hillenbrand, executive director, NACO, 1001 Connecticut Ave. N. W., Washington 6, D. C.

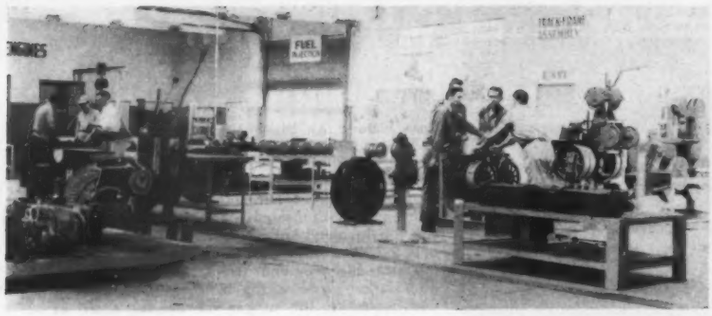
August 17-21 National Shade Tree Conference
Conference, Hotel Statler, Detroit, Mich. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 21-26 International Road Congress
Eleventh World Meeting of Permanent International Association of Road Congresses and Road Show, Copacabana Palace Hotel, Rio de Janeiro, Brazil. Eng. Luiz de Mattos, general secretary, IRC, Avenida Presidente Vargas, 522, 13.0 andar, Rio de Janeiro, Brazil.

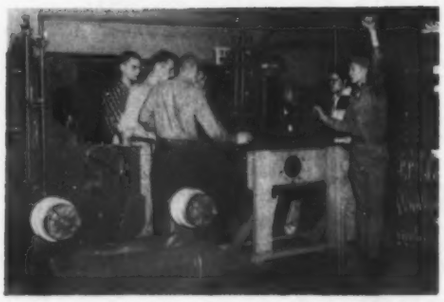
Bureau of Reclamation now headed by Dominy

Floyd E. Dominy has been named Commissioner of the Bureau of Reclamation, succeeding Wilbur A. Dexheimer, who resigned. Dominy was formerly associate commissioner of the bureau.

Dexheimer, who will engage in private consulting work, had been with the bureau since 1928, except for four years with the U. S. Army Corps of Engineers during World War II and a year with an American company in China after the war.



Bulk of student instruction is done in this 125×60-foot shop training area. All work on such units as engines and final drives is done under the eyes of qualified men at this mechanics' school, a branch of Greer Technical Institute.



Trainees are instructed in how to adjust the rear-mounted cable control unit used to control the blade of a TD-14 or TD-24 tractor.

Students start assembling and disassembling engines in the construction-equipment mechanics' school, after their study of engine theory.

Countdown for mechanics

540 hours of training in 13½-week course offered by school for equipment repairmen

A good construction-equipment mechanic is a hard man to find. But in an effort to make the search an easier one, Greer Technical Institute recently set up a school to train these specialists. Located in Wilmington, Ill., 60 miles southwest of Chicago, the Construction Equipment Mechanics' Training Division is the first school of its kind in this country.

For young men interested in becoming construction-equipment mechanics, the school offers an intensive 13½-week course. During the 540 hours of training, students learn the fundamentals in operation, maintenance, and repair of the working parts of earthmovers. They tear apart and put back together some $100,000 worth of engines, transmissions, hydraulic systems, and other components. In the final week of the course, they actually trouble-shoot on operating equipment.

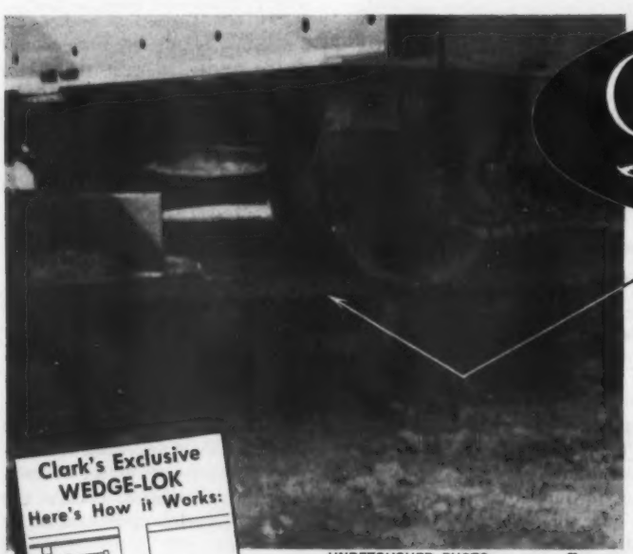
Although the 13½ weeks of training don't turn an inexperienced man into an expert mechanic, they give him a working knowledge of such things as diesel engines, injection systems, torque converters, steering systems, and other components of heavy equipment. With this background, he can be a valuable man to a contractor or a distributor.

Tell, show, and do

The school has an effective method of teaching the student. It consists of three steps: Tell the student; show him; and then have him do it.

For telling the student, the school has a classroom for group lectures. For showing him, there is a projector room where slides, strip films, and movies illustrate the mechanics of the various working parts of the equipment. Most of the emphasis is on the last step—letting the student do it himself.

For this work, the student goes to the adjoining 125×60-foot shop training area. Here, various parts of equipment—such as engines, transmis-



NOW! form setting time reduced to a minimum with Clark Wedge-Lok* the exclusive method of form joint.

See your local dealer for the complete Clark line of construction equipment.

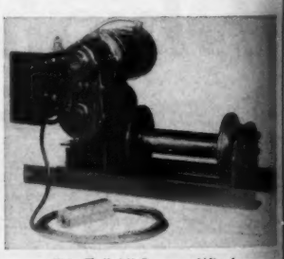
UNRETOUCHED PHOTO

*PAT. PEND.

CLARK INDUSTRIES
construction equipment division
375 EAST FIFTH AVENUE • COLUMBUS 1, OHIO
DIVISION OF CLARK GRAVE VAULT CO.

For more facts, use Request Card at page 18 and circle No. 404

The Most Versatile Electric Power Winch or Hoist You Can Buy!



"My-Te" All-Purpose Winch

A new portable all-purpose winch powered by car or truck battery lifts 2500 pounds and pulls 5000 pounds. The My-Te All-Purpose Winch works off any 6 or 12 volt battery. It is considerably less expensive than a winch with power take-off, and offers the additional advantage of portability.

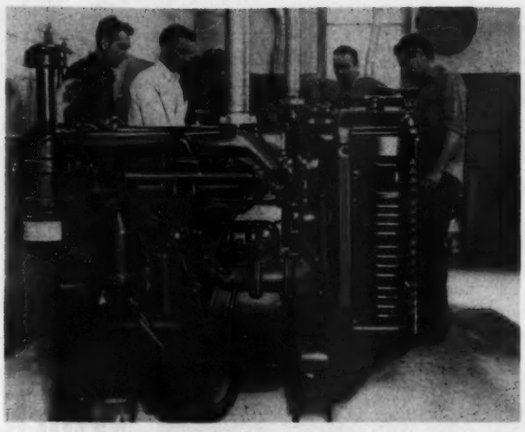
Other features include stress-proof shafts and gear ratio of 175 to 1, completely sealed gear housings, constant pressure brake when free spooling cable, and 10-ft. remote control cable with forward and reverse action.

List price is $237.50

Dealers' Inquiries Invited

CITY ENGINEERING CO., INC.
Dept. C&E
3547 Mass. Ave. • Indianapolis 18, Ind.

For more facts, circle No. 405



In the live-engine room, students trouble-shoot and tune up engines. Here they're working with UD-6, UD-9, and UD-18 engines. All equipment was furnished to the school by International Harvester, but when students are graduated, they will be able to work on any line.

In the welding shop, located at the site of the earth-moving school run by Greer Institute, instructor Frank Sinkular watches a student make a fillet weld. A P&H 200-amp gasoline-driven arc welder supplies the juice.

sion, and final drives—are set up so that the student can work on them. Under the guidance of a qualified instructor, the students tear the machines apart and put them back together again. They learn how the individual parts work and what can go wrong with them.

The $100,000 worth of equipment furnished by International Harvester includes: two gasoline and three diesel engines for assembly and disassembly work; three live diesel engines for trouble shooting and tuning up; fuel pump stand for testing diesel injection systems; the rear end of a TD-24 tractor; and many other components. Although the equipment is all International, the basic working parts are similar to those in other makes. The new mechanics may get used to working on red machines, but will still be able to use their talents on rigs painted yellow or pea-green.

Well rounded course

The first 60 hours of the trainee's time is spent on diesel engines. The next 60 hours is spent on fuel-injection systems. Subsequent 60-hour sessions cover torque converters, final drives, steering systems, tractor tracks, cable controls, and welding. In the last week of the course, the students tune up and trouble-shoot actual operating equipment. For this work, they go to nearby Braidwood, where Greer runs a school for construction-equipment operators.

At present the school has two instructors. Frank Sinkular, who teaches welding, is an old-timer with many years of practical welding experience. Instruction on the equipment is handled by Al Barra. An alert and enthusiastic teacher, he draws from 15 years' experience in the field of equipment maintenance. Having worked for a contractor, a distributor, and a manufacturer, he knows the problems the young mechanics will face when they are on their own.

(*Continued on next page*)

Al Barra, left, one of the instructors, and Keith Hutchison, manager of the school, go over work for the following day.

"LUBRIPLATE ENDED OUR TRANSMISSION TROUBLES"

says: DAVID TESONE TRUCKING CO.

"After installing larger engines in some of our trucks, we began to experience transmission failures due to faulty lubrication. We tried several types of gear lubricants without success, until we tried LUBRIPLATE APG #140 Gear Lubricant. Then our gear troubles ended. We are also getting outstanding results from LUBRIPLATE 630-2 in chassis and wheel bearings of our 40 heavy duty trucks!"

David Tesone

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE GREASE AND FLUID TYPE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

LUBRIPLATE is available in grease and fluid densities for every purpose . . . LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK" . . . a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

For more facts, circle No. 407

MOVES with the JOB! NO CONCRETE PITS!

THURMAN **Portable Truck Scale**

OTHER THURMAN SCALES:
PIT • WAREHOUSE • INDUSTRIAL • WHEELBARROW
LIQUID WEIGHING • BATCHING • AUTOMATIC

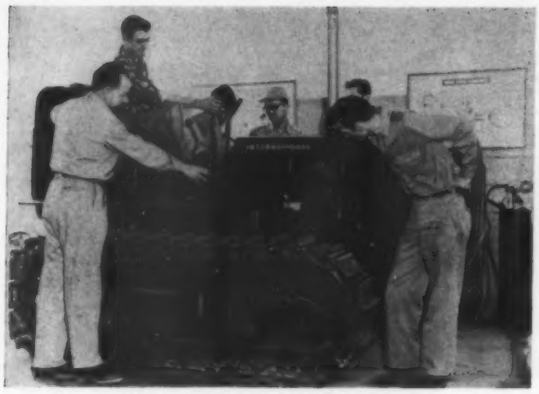
Sets up in minutes . . . accurate, precision weighing *on-the-site*. Complete steel deck construction. Low original cost . . . no maintenance costs. Can be installed as a pitless scale. Saves pit costs. WRITE OR WIRE FOR BULLETIN 601

CAPACITIES: 20 to 52 tons
DECK LENGTHS: 18 to 43 ft.

Precision Scales THURMAN *Since 1918*

THURMAN SCALE COMPANY, 156 N. 5TH STREET
DEPT. CE-2, COLUMBUS, OHIO

For more facts, use Request Card at page 18 and circle No. 406



Tractors such as this International TD-6 are taken completely apart, repaired, and assembled again by the students, then put to work on the school's 1,700-acre operators' training school at Braidwood. Before the 540-hour course is over, the men are completely familiar with every component part of most construction rigs.

(Continued from preceding page)

The construction-equipment mechanics' school opened its doors for the first time in July, 1958. It is a branch of Greer Technical Institute—a well established trade school in Chicago. In October, 1956, Greer started the Heavy Equipment Operator's Division in Braidwood, Ill. (See "School Learnin' for Equipment Operators," C&E, June 1958, page 110.) Under the able leadership of manager Keith Hutchison, the school has gained a good reputation for turning out qualified operators. Hutchison also runs the mechanics' school.

Right now there are 20 students in the mechanics' course, but Hutchison anticipates a greater enrollment. Facilities can accommodate up to 80 men. Private homes in the community provide room and board for the students, who pay $540 for the 540 hours of instruction. THE END

Florida's Sunshine State Parkway reached a record gross revenue in March, the highest for any month since the turnpike began operations. March revenue was $621,996.28.

Case history

Tongs save 150 hours in pulling steel piling

The use of semiautomatic tongs saved approximately 150 hours while pulling sheet-steel piling after construction of the foundation for the Crown-Zellerbach Building, San Francisco.

According to the foundation subcontractor, Ben C. Gerwick, Inc., the tongs saved about 15 minutes on each of 600 piles, as compared with the traditional method.

Formerly, the contractor burned four 3-inch holes in the top of each pile and inserted pins attached to a

"ON THE JOB WHEN YOU WANT THEM!"

SYLGAB
STEEL and WIRE ACCESSORIES for Fast FIREPROOFING of Structural Steel

RIGID BEAM CLIP
5' lengths
— installed with lightning speed.
Made of #12 or #10 gauge galvanized.

★

HAUNCH STIFFENER
for beams over 16" deep. Made of #10 or #12 gauge galvanized wire.

★

TOGGLE HANGERS
More rigid than any wire. Used in conjunction with
SYLGAB SNAP-ON HAIRPIN CLIP
to tie main and cross furring together.

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Sylgab Steel & Wire Accessories conform to the specifications of the Concrete Reinforcing Steel Institute.

Quality — Service
Ease of Installation

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STEEL & WIRE CORP.
79-05 Cooper Ave., B'klyn 27, N. Y.

BEAM CLIPS • SPECIAL COLUMN CLIPS
EXPANSIBLE CLIPS
STRAIGHT AND COIL WIRE
HAIRPIN CLIPS • TOGGLE HANGERS
FORM SPACERS • BAR ACCESSORIES
Request Catalog—Phone or Wire Collect

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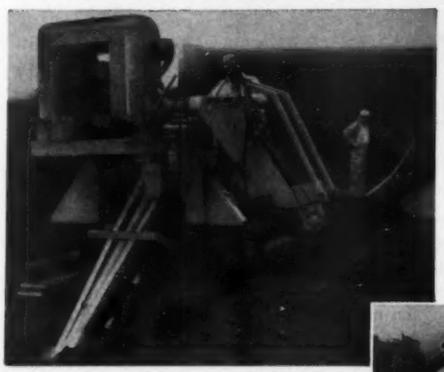

Which Size For YOU?

Rugged, Inexpensive VERMEER
POW-R-DITCHERS

If one of your problems is low-cost, time-saving trenching and ditching . . . take a look at the VERMEER POW-R-DITCHER line before you buy! The 524T (above) digs 8" to 24" wide. The 4T (right) digs 6" to 14" wide. Both are fast, rugged, self-propelled and low in price. Ideal for digging foundation footings, gas, water, sewage and service lines. A third smaller unit also available.

Write For Literature and Low Prices On The Complete Line

VERMEER MANUFACTURING COMPANY
1437 W. WASHINGTON PELLA, IOWA

For more facts, use Request Card at page 18 and circle No. 409

INGRAM
ROLLERS

TANDEM AND 3 WHEEL ROLLERS
Available in All Sizes

Acme IRON WORKS
P. O. BOX 2020 • SAN ANTONIO, TEXAS
EXPORT OFFICE 26 BROADWAY, NEW YORK

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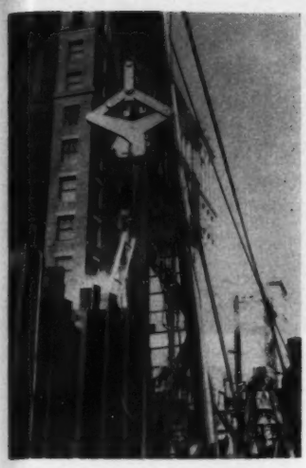


A steel pile is pulled with semiautomatic Heppenstall tongs after construction of the foundation for the Crown-Zellerbach Building, San Francisco. Jaws of the tongs have a maximum opening of 6 inches and can exert a pull up to 100,000 pounds.

wire sling. However, the tongs, designed and manufactured by the Heppenstall Co., grip a pile firmly and pull it safely, with no need for boring holes or inserting hooks.

Intended for use with ½-inch-thick piling, the tongs have a maximum jaw opening of 6 inches.

For further information write to the Heppenstall Co., Materials Handling Division, Dept. C&E, 5th Ave. and 16th St., New Brighton, Pa., or use the Request Card at page 18. Circle No. 129.

A correction

Vermilya-Brown Co., Inc., New York City, is the general contractor for the church in "Wood Carving Project for Church Is New York's Largest in 20 Years," which appeared on page 49 in the May issue. This fact was omitted in the article.

NOW! A HEAVY-DUTY INDUSTRIAL DIGGER that is TRACTOR MOUNTED

• Digs Faster . . . Deeper. (Up to 6 Ft. Through Any Kind of Soil)
• Fits Most Large Farm and Industrial Tractors
• One Man Operated
• Amazing Low Cost

DESIGNED FOR RUGGED DIGGING
• Telephone Poles
• Footings
• Heavy Posts

Prewitt's NEW INDUSTRIAL DIGGER allows one man to do the job it would ordinarily take a crew of men to do. P.T.O. driven, it utilizes full weight of rear of tractor to force auger into ground. Saves time and money!

FAMOUS PREWITT DIGGERS

HORIZONTAL INDUSTRIAL POST-HOLE

WRITE FOR FREE LITERATURE

J.R. PREWITT AND SONS SINCE 1929

Phone 40 Dept. EC Pleasant Hill, Missouri

For more facts, circle No. 411

Case history

Fleet of rugged haulers keeps job on schedule

International Harvester Payhaulers receive the praise of the Haynes Construction Co., Inc., of Bluefield, West Va., prime contractor for a 2.7-mile stretch of road for the Tennessee Interstate Project. An estimated 2,288,792 cubic yards of roadway excavation is being moved—90 per cent of it rock.

The firm is using two P&H Model 1055 shovels, with 3½-yard buckets, to load the International hauling equipment—four Model 65 and seven Model 96 Payhaulers.

According to Haynes, the dependability of these units enabled the operation to maintain schedule right through severe winter months, averaging 11,000 cubic yards daily with a minimum of downtime.

A P&H Model 1055 shovel loads one of the 11 International Payhaulers used on the job.

For further information on Payhaulers, write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 118.

Q Why do Wide-Awake Contractors Buy Hydrocranes?

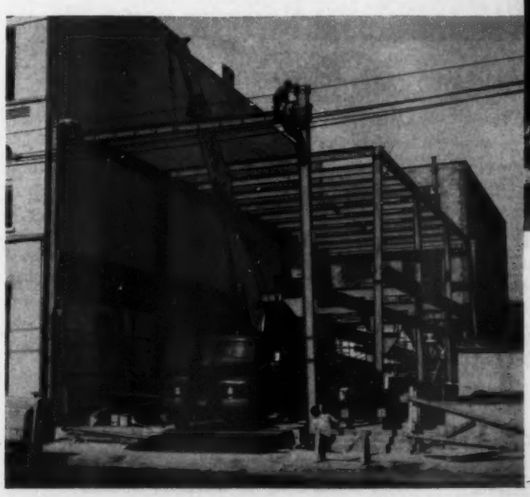
A TWO BIG REASONS ARE MOBILITY... MANEUVERABILITY!

Traffic's no problem for a Hydrocrane . . . nor is working in congested or close-quarter areas. These fast-moving cranes mount on new or used commercial trucks . . . have power-set outriggers to make the crane rock-steady over any ground. They have small truck maneuverability around construction sites to do jobs all over the lot. You make fewer moves, too, because the Hydrocrane boom telescopes in and out hydraulically (even under load) to give you the boom length you need . . . from 38 to 50 feet *as you need it!*

Your Bucyrus-Erie distributor will give you all the facts — prove them with a demonstration. Call him today! For more data, write Bucyrus-Erie Company, South Milwaukee, Wisconsin, Dept. 24H.

PICTURE OF A SUCCESSFUL CONTRACTOR!

Handling hit-and-run work is a profit-maker if you can get there fast, move on fast! With a Hydrocrane you "can do"! You can drive over streets or highways at speeds up to 50 mph, take traffic in stride like a delivery truck.



BUCYRUS ERIE
Builds Better Equipment

Over 50% of all HYDROCRANES sold last year were repeat sales!

For more facts, use Request Card at page 18 and circle No. 412

Trailer camp attracts families to remote job

Contractor supplies school, which doubles as recreation hall for camp families

Many types and sizes of trailers—all owned by the workmen—are in the contractor-built camp. At the center is a laundry and shower building provided by the joint venture.

One way to keep workmen happy and satisfied on a job in a remote location is to make it possible for their families to live at the site. Knowing this, the joint venture on the Fremont Canyon Power Project in Wyoming, Coker-Kiewit-Cunningham, has supplied a completely equipped trailer camp for the mobile homes of its workmen.

The project is located in a beautiful and remote area of Wyoming. It is about twelve miles by the job access road to Alcova, which is little more than the Bureau of Reclamation camp. Then it is another 35 miles by highway to Casper, the nearest city. During the winter, driving is not always easy or even safe.

The modern trailer camp, in a pleasant valley near the job headquarters, is situated between the tunnel headings and the powerhouse site. The contractor graded the site, set transformers and power lines to supply electricity for the camp, and installed complete sewer and water systems for each trailer location. Water is pumped from the nearby Platte River to a large insulated tank on a hill near the camp. Here the water is settled and chlorinated be-

SAME SLING PRINCIPLE AS IN JET PILOT HELMETS

SAFE AND SURE WITH GENTEX CONSTRUCTION SAFETY HATS

Slings in Gentex Safety Hats use same design principle as slings in Gentex jet flight helmets. 6-pt. suspension, 3-layer crossover at crown. Rugged polyethylene shell exceeds all Federal Safety specifications, yet the Gentex weighs within ¾ ounce of any safety hat made. No metal parts — fully non-conductive.

MEN LIKE ITS COMFORT . . . . .
THEY WEAR IT!

Instantly adjustable, snap-in suspension sling, well-ventilated construction insure comfort for every wearer. Good-looking, too — impregnated colors can't chip or flake. Available in green, gray, white, blue and yellow — in both hat and cap models. Examine the Gentex Safety Hat for yourself.

Attach this coupon to your company letterhead and mail for:
Full Specifications ☐ Hat for testing ☐

YOU CAN BET YOUR LIFE ON A GENTEX

World's foremost manufacturer of helmets for the military

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TO INSURE MAXIMUM SAFETY

HAWKEYE PRODUCTS CORPORATION

Standardizes on Lebus Counterbalance Grooving For Personnel Elevators

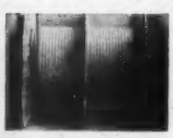


Photo above left shows wire line just starting to spool on dual drums which have been Lebus Counterbalance Grooved. Note in photo at right how perfectly synchronized and spooled the wire line appears after the sixth layer of line. As is evident, a slightly unequal winding would create a serious operational problem. Drum diameter and length are kept at a safe minimum size only through use of Lebus Counterbalance Spooling System.

A NEW STANDARD OF SAFETY AND PERFORMANCE IN ELEVATOR SERVICE

Here you will witness, in action scenes, a new packaged elevator which can be moved and set up anywhere to lift men and materials with greater safety.

To achieve the maximum in safety and comply with the strictest requirements for carrying personnel, the Hawkeye Products Corporation utilizes two independent hoisting cables winding on a Lebus Counterbalance grooved dual hoisting drum. Both sides of this dual drum must wind the cables in perfect unison to assure proper functioning of safety devices. Hawkeye reports, "It would be impossible to obtain this perfect synchronization in dual spooling if it were not for the Lebus Counterbalance Spooling System."

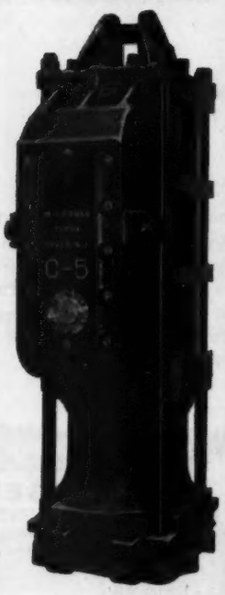
Wherever hoisting units and wire line are in use, the drum core should have Lebus Engineered Spooling.

LEBUS LINE

LEBUS INTERNATIONAL ENGINEERS, INC.
LONGVIEW, TEXAS
WORLD HEADQUARTERS FOR ENGINEERED SPOOLING
Write for catalog with complete information

For more facts, use Request Card at page 18 and circle No. 414

NEW "C" TYPE DOUBLE-ACTING PILE HAMMER



PATENTED

The C5 contains a 5000 lb. Ram which, powered by a 600 cu. ft. air compressor, delivers 16,000 ft.-lb. blows 110 times a minute. Master engineered for higher productivity, precision manufactured for matchless durability — accept less and the ultimate cost will be more!

McK T

McKIERNAN-TERRY CORP.
82 RICHARDS AVE., DOVER, N. J.

For more facts, circle No. 415

The laundry building and the coin-operated machines in it are supplied by the contractor for the convenience of workers and families.

Even though it doesn't make any money, the community store run by the contractor can go on the credit side of the ledger. It meets supermarket prices on most items and handles butane used by many camp families for cooking and heating. Camp manager Ted Voelker, behind counter, keeps the store open during specified hours every day.

fore going to the camp. Sewage is handled through a large septic tank and drain field.

Near the center of the camp area, C-K-C built a central shower and laundry building. This concrete-block building is equipped with coin-operated commercial-type washing machines, an extractor, and a large dryer.

School provides recreation

In one corner of the site, well away from the roads and the other camp facilities, the contractor erected a 3-room school building where elementary classes are conducted for the school-age children of the camp. The school is operated by the local school district, which has found some of its teachers among the wives of the workmen who live in the camp. There have been approximately 60 children in the school at all times during the two years of its operation.

The school building also serves as a community center. On Saturday night there is often a dance or other social gathering, while on Sunday morning, Sunday school classes are held. Other groups, such as PTA, also make regular use of this building.

At one side of the site, the contractor erected a Butler metal building and fitted it out as a community store. The well stocked shelves carry most grocery items found in a supermarket, and the price tags are kept in line with supermarket prices. Ted Voelker, the camp manager, operates the store, keeping it open during regular morning and afternoon hours every day. Stocks are replenished regularly from wholesale grocery sources in Casper. Although the store makes little or no profit, it serves its purpose by supplying the needs of the community.

Television from central antenna

Realizing the impossibility of receiving television programs on ordinary antennas at this location, the contractor arranged for the installation of a master antenna on the top of a high hill near the camp. A coaxial cable, run down to the camp site and carried to each trailer location, makes TV available to everyone in the camp.

The camp was laid out to accommodate up to 100 mobile homes, but it has never been completely filled. Some of the families moved in when the camp opened and have remained more than two years. Others, especially the employees of subcontrac-

(Concluded on next page)

6 men install 970 feet of Corrugated Metal Pipe in 3 days

In the picture you see sections of 36" diameter, one-half asphalt-coated and paved, Corrugated Metal Pipe, ready for installation on US Route 230 just off the Pennsylvania Turnpike. Lane-Penncarva Inc. supplied 970 lineal feet of this pipe for a storm sewer extension. Six men installed every foot of pipe in three days!

Speed like this was possible because Corrugated Metal Drainage Products are light and easy to handle. Easily loaded, easily trucked and easily installed, they don't have to be babied because steel stands up under punishment that would crack or break other materials. This pipe was made from tough USS Corrugated Galvanized Culvert Sheets. It's doubly protected from corrosion—under the asphalt coating is a heavy, uniform coat of zinc.

Metal culvert sheets make strong, long-life drainage structures. Being flexible, metal culverts deflect under load and gain support from the passive resistance of the compressed soil around them. This is why metal pipe can withstand the crushing weight of deep fill *and* the vibration and impact of heavy loads over shallow fill.

For more information, write for our free booklet, "USS Culvert Sheets"; United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pennsylvania.

USS is a registered trademark

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

USS

(Continued from preceding page)

tors, come and go from time to time as their phase of the work is completed.

The 60 to 80 mobile homes of every size, shape, and color belong to the workmen; none are supplied by the contractor. Some of the longtime residents have built extra rooms beside their trailers. Others, like safety engineer Roy Rodgers and his family, have exchanged the small trailers for larger new ones. Roy now boasts the largest home in camp, a 12×50-foot Leisure-Home beauty, which has more modern conveniences than the model homes in some communities.

Even though the camp has a maximum life expectancy of less than three years, and has at times accommodated as few as 50 trailers, the contractor feels that it has been a worthwhile investment. It has been an aid in attracting and holding good workmen on the job by keeping them and their families happy and contented. THE END

Symons enlarges staff

James J. Cotter has joined the Jersey City, N. J., office and warehouse staff of Symons Clamp & Mfg. Co., Chicago. Frank Fearon continues as New York sales representative.

Employment application form is illegal

To the Editor
CONTRACTORS AND ENGINEERS
Dear Sir:

We read with interest the article in the February issue of CONTRACTORS AND ENGINEERS on "Timekeeping and Payrolls," by George E. Deatherage, P. E. While we found the entire article of great interest and much of it of great value, we feel that your readers should be warned of the pitfalls present if they should use the sample "Application for Employment" shown as Figure 1 of the article.

We have been advised by legal counsel, experienced in the labor relations field, that the question asked regarding union affiliation is a direct violation of the Taft-Hartley Law and gives a rejected non-union applicant very good grounds for an unfair labor practices suit.

In addition, under the Fair Employment Practice Act of the state of Michigan, and perhaps other states, the questions asked regarding birthplace, naturalized citizen, years in the United States, and color are violations of the law and again make the employer liable for charges of discrimination on grounds of race, color, or national origin.

We feel that you would do a great service to your contractor readers if you would, in an early issue, advise them to be extremely careful in using any type of application form such as was illustrated in the article referred to.

Yours very truly,
Richard F. Brennan, President
Brennan Co.
Detroit 8, Mich.

Distributor Doings

Huber-Warco adds dealer

Brantley Machinery Co., 701 Andrews Road, Columbia, S. C., has been appointed a distributor of motor graders, tandem rollers, 3-wheel rollers, and maintainers produced by Huber-Warco Co., Marion, Ohio. The dealer will provide sales, parts, and service for equipment owners throughout the state.

New B-E distributors

Bucyrus-Erie Co., South Milwaukee, Wis., has appointed Valley Materials Handling, Inc., 6012 Clinton Highway, Knoxville, Tenn., a Hydrocrane distributor in eastern Tennessee.

Lake Shore, Inc., Service & Supply Division, Iron Mountain, Mich., has been named a B-E distributor of excavator-cranes, Hydrocranes, buckets, and parts. The dealer will cover the Upper Peninsula of Michigan and the Wisconsin counties of Ashland, Iron, Vilas, Forest, Florence, and Marinette.

Mussens Canada Ltd., Montreal, Que., Canada, has been appointed a distributor for Bucyrus-Erie Co. of Canada, Ltd., Guelph, Ont., as well as for the parent company. The distributor will cover the provinces of Quebec, New Brunswick, Nova Scotia, and Prince Edward Island.

Southern Equipment names

Thomas L. Downs has been appointed vice president of Southern Equipment & Tractor Co., Inc., Monroe, La. Downs also continues as manager of the company's Shreveport office.

"Our Ford F-800's, pulling 20-ton payloads, give us mighty good service!"

says R. Dillard Teer, Vice President
Nello L. Teer Co., Durham, N. Carolina

"We operate about 115 Ford Trucks ranging in size from ½-ton pickups to Tilt Cab Tandem tractors. We believe in carefully fitting the truck to the job to be done and usually stay within the manufacturer's recommended ratings. We make an exception to this rule with our Ford F-800's, pulling 20-ton loads in aluminum trailer dumps to our quarry and crushing setup at Durham, North Carolina. These units are carrying the maximum legal limit and give us mighty good service!

"We haven't traded any trucks in about 6 years. It just happens that our company has been growing so rapidly that when we buy a new truck, usually an F-800, I put it under one of our trailer dumps. Then I'll take the old truck, lengthen the chassis, and make a grease outfit or a water wagon out of it. I would say out of over a hundred Ford units in the past 7 or 8 years, we have gotten rid of only a dozen altogether—and some of these were wrecked or burned.

"Another reason we use Fords is that this business is rough on trucks, so parts availability is very important. Our experience over the years with Ford as compared to Ford competitors has been definitely in favor of Ford on parts."

Euclid adds dealers

Goddard Machinery Co., Inc., 6650 Mykawa Road, Houston, Texas, has been named a dealer for the earthmoving-equipment line of Euclid Division, General Motors Corp., Cleveland. The dealer, which will cover the southeastern part of the state, has a branch at 5190 Port Arthur Road, Beaumont.

San Diego Tractor & Equipment Co., 6055 Fairmount Extension, San Diego, Calif., will carry the complete line of Euclid earthmoving, mining, and construction machinery in Imperial and San Diego counties.

Kwik Mix appoints three

Fincham Equipment Co., 1033 W. Mississippi Ave., Denver, Colo., has been appointed a distributor for all products made by Kwik Mix Co., division of Koehring Co., Port Washington, Wis. The dealer will cover Colorado and all 11 southern Wyoming counties.

Wepco Equipment Co., 3421 Independence Road, Cleveland, will carry the Ka-Mo line of drill tools in northern Ohio.

Wade Masonry Supply Co., 1218 S. Denver St., Russellville, Ark., will also offer the Kwik Mix construction machinery line. The dealer will cover all but 15 counties in the state.

Parker-Hannifin appoints

J. F. Ostergren has been named district manager of distributor sales for the Southeast for Parker-Hannifin Corp., Cleveland. From Birmingham, Ala., headquarters, Ostergren will cover Florida, Georgia, Alabama, Mississippi, and the Memphis area of Tennessee.

J. E. Sackett has been promoted to the post of service and quality manager of the company's Parker Hydraulics Division. His new assignment involves quality control and customer service for the line of hydraulic components for mobile equipment.

RCA appoints dealers

Two companies have been named to carry mobile communications equipment produced by Radio Corp. of America, Camden, N. J. Eastern Theatre Supply Co., Inc., 496 Pearl St., Buffalo, N. Y., will serve the northwestern section of New York State.

Electronic Specialty Co., Delaware Ave. and Randolph St., Charleston, W. Va., will cover the western part of that state.

Two form dealership

William J. Smith and Thomas A. Hartley have established their own firm, Smith-Hartley Associates, 509 Madison Ave., New York City. The new firm will represent The Convenco Co., special conveyor and engineered equipment; Heil Process Equipment Corp., chemical-resistant equipment and materials; and Atlas Foundry & Machine Co., steel and iron castings. The new company will cover metropolitan New York, New Jersey, Connecticut, and eastern Pennsylvania.

Marlow Pumps honors five for highest sales volume

Five distributors for Marlow Pumps, Division of Bell & Gossett Co., Midland Park, N. J., were awarded plaques for highest sales volume in 1958. The dealer with top sales for construction pumps is Foundation Equipment Corp., Long Island City, N. Y.; for petroleum marketing pumps, L. M. Barish Co., New York City; for industrial pumps, Harris Pump & Supply Co., Pittsburgh; and for sprinkler irrigation pumps, Larchmont Farms, Inc., Larchmont, N. Y. Honored for outstanding performance for petroleum marketing pumps was E. O. Habhegger Co., Philadelphia.

Ford dealers' convention

Representatives from Ford industrial-product dealerships in 26 states and Canada met recently in Detroit for the fourth annual industrial-products sales and service training conference. The 3-day meeting, sponsored by the Ford Division, Ford Motor Co., Dearborn, Mich., helped familiarize the dealers with scheduled advertising and sales promotion programs, as well as the new-products, product-improvements, service, policy, and warranty program.

Fageol appoints two

Amick Equipment Co., Inc., 1812 Frink St., Cayse, S. C., has been named a distributor for flasher safety lights and barricades manufactured by R. D. Fageol Co., Kent, Ohio. The dealer will cover the entire state.

Adams Construction Equipment Co., 1342 W. Church St., Orlando, Fla., will also handle the complete line of Fageol equipment.

←For more facts, circle No. 416

NOW! CERTIFIED PROOF!

FORD TRUCKS COST LESS

'59 Ford Pickups
beat average mile-
age of other leading
makes by 25.2% in
Economy Showdown U.S.A.

Here at last is certified proof of the differences in gas mileage between six-cylinder pickups . . . evidence that you can use in your operation.

It was compiled by America's foremost independent automotive research firm after testing 1959 six-cylinder, ½-ton pickups of the six leading makes. All trucks were bought from dealers—just as you would.

The tests paralleled every kind of driving—high speeds and low, open highways and city traffic, even door-to-door delivery. And in every test, '59 Ford Sixes delivered more miles per gallon than any other make. Here are the actual percentages:

'59 FORD PICKUP SIXES GAVE
42.6% better mileage than make "D"
31.1% better mileage than make "I"
25.2% better mileage than make "C"
22.0% better mileage than make "S"
9.6% better mileage than make "G"

Taken together, Ford got 25.2% more miles per gallon than the average of all other leading pickups!

What's the secret of Ford's economy? First, of all pickup sixes, only the Ford Six has modern Short Stroke design which reduces friction and requires less fuel. Second, to this modern engine, Ford has added a new economy carburetor to meter fuel more precisely in both high- and low-speed ranges.

See your Ford Dealer for the full report of Economy Showdown U.S.A. and get the whole story firsthand.

All tests conducted and results
CERTIFIED
by America's foremost independent automotive research organization*
*NAME AVAILABLE ON REQUEST
Send inquiry to P.O. Box 2567, Ford Division
Ford Motor Co., Detroit 31, Michigan

Now! During Dividend Days at your Ford Dealer's...Go *FORD*-ward for Savings

Men

Charlie Keller:

Ambassador to five countries

by WILLIAM T. DARDEN
feature editor

American manufacturers of construction machinery—particularly 11 of the larger firms—have an energetic good-will ambassador in a Swiss dealer who represents them in three European and two Middle Eastern countries. And like many another ambassador, this distributor finds time in his busy life for many other activities—one of them being writing.

Now most equipment distributors would find a $6-million-a-year business spread out over five countries more than sufficient outlet for their energy—especially if the business required one or more trips across the ocean each year, not to mention frequent trips to the branch offices. But Charlie Keller, who operates just such a business, has energy left over. And he has put it to creative use, so that today he is a popular author of both fiction and nonfiction in his native Switzerland and in nearby countries.

None of this is really very surprising after you've talked awhile with Charlie. He's the proverbial bundle of energy—always on the go, full of ideas, plans, and opinions, and

Need Fresh Air?

It's no problem to take fresh air with you in underground operations with NAYLOR large diameter pipe.

Lines of NAYLOR are easy to install because they are light in weight and easy to handle.

But don't let this light weight fool you. The NAYLOR spiral lockseam creates a pipe with the extra strength and safety needed for handling push-pull ventilating systems.

The one-piece NAYLOR Wedgelock coupling further simplifies the job and NAYLOR lines can be made up with only one side of the pipe in the open through this improved method of connection.

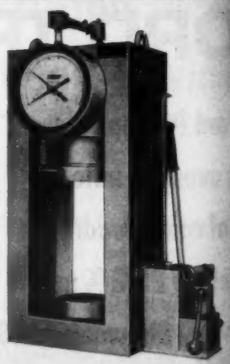
Whether you need pipe for fresh air, air under pressure or for handling water, it will pay you to write for Bulletin No. 59.

NAYLOR PIPE Company

1270 East 92nd Street, Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 60 East 42nd Street, New York 17, N. Y.
For more facts, use Request Card at page 18 and circle No. 417

MODEL FT 20
JOBSITE
CONCRETE TESTER



FOR: CYLINDERS, CORES, BLOCKS, BEAMS, CUBES, BRICK AND DRAIN TILE
FORNEY'S INC.
TESTER DIVISION
BOX 310, NEW CASTLE, PA., U.S.A.

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ready to talk on almost any subject you can name.

Charlie is a distributor for American-made construction machinery in Switzerland, Germany, Austria, Lebanon, and Iraq. Specifically, he has companies in Zurich, Dusseldorf, Vienna, Beirut, and Bagdad.

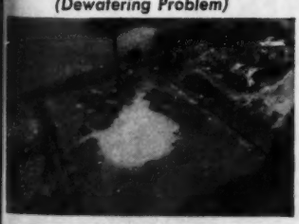
His accounts include some of the biggest names in American construction - equipment manufacturing: Michigan, Euclid, Gradall, Lima, Chain-Belt, Huber-Warco, Koehring. Altogether, he represents 11 U. S. manufacturers.

Proof that he throws himself into his business is the fact that in the 12 years he has operated in Switzerland, Charlie's company has grown to be the third largest equipment distributor in the country. And this is even more impressive than it sounds, for the first two firms—both over 100 years old—are also manufacturers—a role that accounts for a considerable portion of their business volume.

Three years after he started his business in Zurich, Charlie formed a

(*Continued on next page*)

GOT THIS?
(Dewatering Problem)



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SALES • RENTAL • CONTRACT
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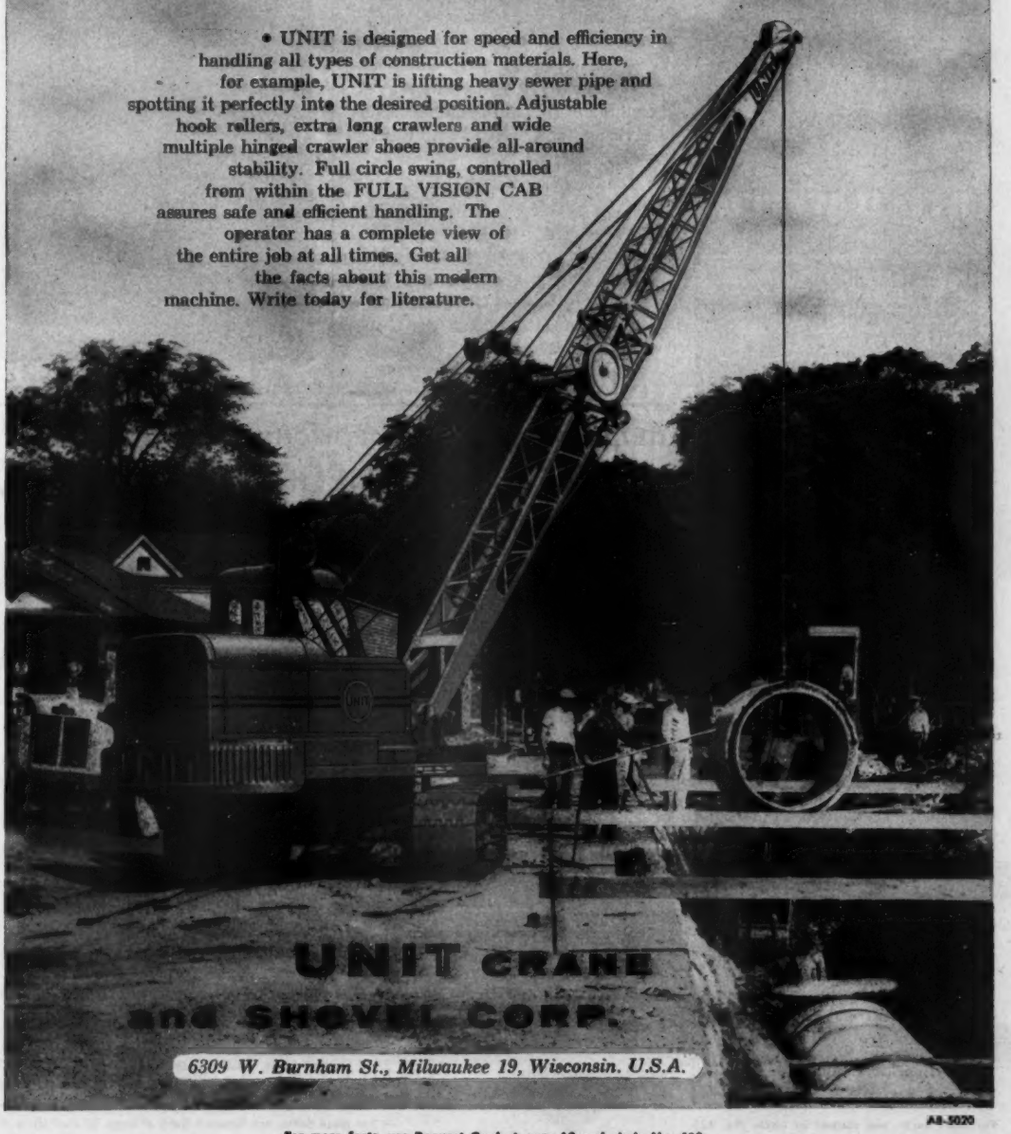
UNIT CRANE & SHOVEL CORP. MILWAUKEE, WISCONSIN

fast Handling
with SAFETY!

• UNIT is designed for speed and efficiency in handling all types of construction materials. Here, for example, UNIT is lifting heavy sewer pipe and spotting it perfectly into the desired position. Adjustable hook rollers, extra long crawlers and wide multiple hinged crawler shoes provide all-around stability. Full circle swing, controlled from within the FULL VISION CAB assures safe and efficient handling. The operator has a complete view of the entire job at all times. Get all the facts about this modern machine. Write today for literature.



UNIT CRANE and SHOVEL CORP.
6309 W. Burnham St., Milwaukee 19, Wisconsin, U.S.A.

AB-5020

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(Continued from preceding page)

distributor firm in Vienna, and one year later he organized the Dusseldorf company. In 1953 he began doing business in Beirut, and the next year he started a firm in Bagdad. Unlike the system of branch offices in this country, Charlie's business is made up of five distinct companies. His personal supervision of these firms—plus the necessary trips to this country to confer with his manufacturer accounts—really keeps him on the go.

37 crossings since 1945

In all, Charlie has crossed the Atlantic 42 times—37 of them since 1945. He first came to this country in 1926. In 1928 he came here to work as a draftsman-technician, and for five years he was employed by the American Can Co. at its Newark plant. After returning to Switzerland he engaged in various enterprises before going into the distribution of construction machinery in 1946.

Charlie is sole owner of the Swiss company, and he owns 60 per cent of the stock in the other four firms. The managers of these other companies own the other 40 per cent.

Though he has four salesmen covering all of Switzerland for his firm in Zurich, Charlie himself finds time to call on contractors and handle the bigger sales himself. In Germany, his firm employs a small number of key salesmen, who in turn hire "sub-salesmen" throughout the country. These "sub-salesmen" work for the major salesmen, who in turn report to the firm in Dusseldorf.

Charlie's Swiss company has as up-to-date an operation as can be found anywhere in this country. His repair shop is a modern 450-foot-long×90-foot-wide structure consisting of two repair bays and a center hall for crane repairs. A total of 18 mechanics handles repair work, with six of them constantly traveling in completely outfitted trucks to handle field service work. Modern machine tools and welding equipment—mostly European - made—are used in the shop to service and repair rigs. A parts inventory valued at about $500,000 is kept on hand.

A small service shop and comparatively light parts inventory is maintained in Lausanne to handle servicing and repair in western Switzerland.

The modern Zurich plant, built only four years ago, contains a cafeteria for the use of the firm's 56 employees. Additional proof that Charlie believes in good employee relations is the fact that he was a pioneer in establishing the 5-day work week there.

The large parts inventory kept on hand at the Zurich plant is necessary because of the great distance to manufacturers' plants—one of the real problems in overseas distribution. Like every other dealer, Charlie hates to have so much capital tied up in parts and components, but deliveries are unsure and service is just as important a part of the dealer's operation in Europe as it is in America.

Charlie hopes that American manufacturers will do something to facilitate delivery of parts and machines to overseas distributors. He feels that often delays are unnecessary, and he hopes that if this problem can be properly brought to the attention of manufacturers better service can be provided.

Translates literature

The foreign dealer does have extra work when it comes to using manufacturer aids such as literature and specification sheets. In Charlie's case, the manufacturer's literature is translated into the language of the country; in Switzerland, this means both French and German. Sometimes the manufacturer provides the literature with blanks for insertion of the translation; other times an entire new brochure must be prepared.

Again, like his colleagues in this country, Charlie would like to see more help from manufacturers in the matter of financing. He uses local banks to finance purchases, but he awaits the day when manufacturers will use purchase credit plans instead of the outright dealer purchase.

AMAZING NEW TRENCHING TOOL!

DITCH WITCH
9.2 HP M-3 3 SPEEDS

TRENCHES 1200-2400 FT. PER 8-HOUR DAY!

ABOUT 2c A FOOT IS USUAL TRENCH COST!

CAN PAY OUT IN 4 WEEKS; EASILY EARNS $120 A DAY!

DIGS ANY SOIL THAT CAN BE DUG BY ANY MACHINE!

FEATURES: Sealed planetary geared reduction unit eliminates excess belts, sheaves, chains and sprockets. Telescoping boom and sectional chain easily adapt unit for maximum performance on any job.

Trenches 3-8" wide, up to 4' deep; digs road crossings; gas, water, electric and telephone service lines; undercuts sidewalks; and trenches for ground wires, street lighting, traffic signals, sprinkler systems, footings, etc.

CHARLES Machine Wks., Inc.
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Distributors all over the world sell, rent and service Ditch Witch trenchers. Contractor's service is available everywhere at reasonable rates. For further information, write, wire or call.

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Gentlemen: Please send the information checked, at no obligation.
☐ Demonstration ☐ Rental Information
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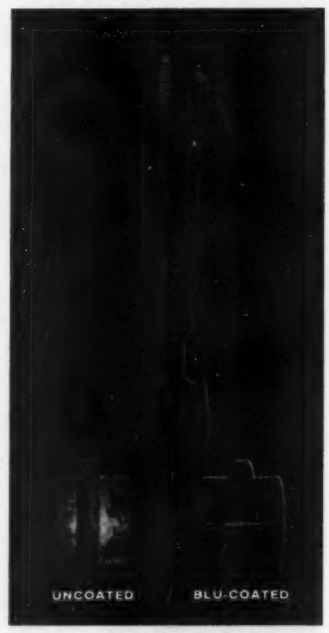
BUILT-IN RUST PROTECTION



Blue Brute Air Tools give you a big money-saving feature—they resist rust and corrosion. The reason is an exclusive process: Blu-Coated Parts. With Blu-Coated Parts Worthington Air Tools operate better job after job and in damp atmosphere. They resist wear, seizing, galling. They hold oil better. Even after your toughest jobs you can store them for months without deterioration.

Blu-Coated and Worthington Distributor's Guaranteed Availability Plan keep your jobs going even if your tools are in for checkup or repair. GAP works this way: 1) bring in your Blue Brute tool for repair. While it's in distributor's hands he will, 2) lend you an air tool to keep your job going. See him for complete details, about Blu-Coated, GAP, and assured parts and replacements. 60-15

WORTHINGTON

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Benefit by the exceptional advantages of
AIR-COOLED DIESEL POWER

For All of Your Power Requirements Specify Lister 3½ to 36 B.H.P.

Note these typical examples of versatile Lister-powered equipment:

- Immediate starting in all temperatures
- Long life
- Noteworthy operating economy
- Continuous, trouble-free service

SIMPLICITY and DEPENDABILITY are stressed in these exceptional, versatile air-cooled Lister Diesels, particularly designed and manufactured for construction uses.

Write for literature. Our engineering department will be glad to advise on your requirements.

Distributorships available in some areas

LISTER-BLACKSTONE, Inc.
42-32 21st Street, Long Island City 1, New York, Tel.: STillwell 6-8202
In Canada: Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

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Then there's the perennial problem of trade-ins. These plague the foreign dealer just as they do the man here at home. It's a headache for Charlie at times, but he has "pretty good luck" with rebuilding and selling used equipment.

There is a difference here, though, Charlie points out. It's his observation that contractors' help in Europe take better care of equipment than we do here; most operators, he says, are also mechanics and spend their non-operating hours and days keeping the rigs in shape. Also, he says, European contractors do not push their rigs as hard as we do. Consequently, trade-ins are not as frequent as they are here because contractors hold onto their rigs longer.

American dealers have expressed concern in recent years over the practice of U. S. service outfits dumping used equipment on the market, thereby unwittingly competing with distributors both here and abroad. Charlie reports this practice "has killed many a sale" for his firm. "The dealers are hurt in this practice because of the unfair competition, but the manufacturers are not because the services turn around and buy new equipment. It's a real problem, and I wish someone would come up with an answer."

In spite of the fact that his sales volume in Switzerland alone has averaged $2.5 million in the last couple of years, Charlie sees a change coming over the market overseas—and it isn't altogether good for the distributor of American equipment. He reports that sales of American-made equipment are diminishing in Europe because of higher costs as compared to European equipment, transportation costs, and the import taxes. European manufacturers are coming to the fore, too. American manufacturers are getting around this increased competition by establishing licensees or building plants in European countries, and Charlie foresees the day when he will work with licensees or European plants altogether, rather than directly with the home offices in this country.

U. S. equipment "superior"

The prospect of European manufacturers producing all the construction machinery for that continent is not an immediate one, however, Charlie feels. He declares that our equipment is for the most part superior to European rigs ("American manufacturers have little to learn from European manufacturers"), and that we have the facilities—including the extremes of hot and cold weather and varieties of terrain—to develop and test a variety of equipment. Besides, the capital available here for development and manufacture is not available generally in Europe, he points out.

Despite the changes that he foresees in the overseas market, Charlie is forging ahead expanding his business. The two Middle Eastern companies have not really had a chance to prove themselves, because of the political unrest and government restrictions, but Charlie has high hopes for good business in the future. He points out that there are "tremendous possibilities" for sales in this area, what with such planned projects as the Pan-Arabian Highway, new pipelines, factories, hydroelectric projects, and irrigation developments.

And what of the books he finds time to write? Well, this busy distributor and traveler writes "for relaxation" mainly, but he has managed to corner himself a share of the market in both fiction and nonfiction in Switzerland and the adjoining countries.

His first and second books were suggested by his own experiences. Charlie was first an amateur and then a professional boxer while in this country, and the hero of his first novel is a boxer. The next book is concerned with a young engineer who comes to this country and observes the political and social life of changing America.

He has also written a popular self-help book on—in his own words—"how to be successful and happy at the same time."

Judging by Charlie's growing business and enthusiasm, he has done pretty well on both counts. THE END

World's largest truck built for remote areas

The world's largest truck, 16 feet wide and riding on tires that would dwarf the tallest men, was recently displayed at the International Petroleum Exposition. Built by Automobiles M. Berliet of Lyons, France, the truck reportedly can carry payloads of 100 tons over all types of terrain, because the 8-foot tires—manufactured by Goodyear Tire & Rubber Co., Akron, Ohio—are designed so that the ground pressure simulates that of camels' feet.

The Berliet T-100 measures 16 feet wide, 13 feet high, and 41 feet long. The bearing area of all six tires comes to a total of 100 square feet, which, for a 100-ton truck, results in a pressure of 14 psi. Included in the truck are power steering, power brakes, and a power-assisted gear shift that has 8 forward speeds and 8 reverse. It is equipped with a 600-hp turbo-diesel engine.

The air-conditioned cab has five-abreast seats, two sleeping berths, a cooking range, and drinking-water tanks. A 2-way radio keeps the operator in constant touch with the home base.

For more facts, use Request Card at page 18 and circle No. 424

STERLING
EARTH BORING
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2 IN 1
DIGGER
DRIVER

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KINGSTON, PENNSYLVANIA
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GUARD RAIL CONTRACTORS & HIGHWAY DEPARTMENTS!

Steel Post Driver For Any Model Sterling Digger. YOU can Dig the Hole, Set the Post or Drive the Steel Post with one unit at one cost and one maintenance! Dig or Drive from either side within 180° radius.

Driving Plate can be removed and auger installed on Digging Bar in five to ten minutes.

A Proven Machine At Less Than Half The Cost of Similar Equipment.

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McGraw executive changes

The New York City engineering and construction firm of F. H. McGraw & Co. has created three new executive posts. Frank J. McClean and Donald W. Neville are now senior vice presidents; Robert B. Burroughs is vice president in charge of administration, and continues to serve as company secretary.

Clifford S. Strike has been re-elected president and a member of the board of directors. The entire board was also re-elected.

M. H. Cutler, engineering manager of Stone & Webster Engineering Corp.

Stone & Webster names engineering manager

M. H. Cutler has been named engineering manager of Stone & Webster Engineering Corp., Boston and New York City. He succeeds Fred W. Argue, who was recently appointed executive vice president.

Thomas A. Fearnside succeeds Cutler as assistant engineering manager. Floyd F. Dedrick, assistant chief mechanical engineer, takes over Fearnside's former post as chief mechanical engineer.

Asphalt Institute adds hydraulic specialist

Col. W. Dixon Smith (U. S. A., ret.) has been appointed staff hydraulic engineer for The Asphalt Institute. Col. Smith will fill a post created by the institute's board of directors in recognition of the growing importance of asphalt in various phases of hydraulic engineering. In recent years there has been an increasing use of asphaltic materials in canal and reservoir lining, low-profile groins for shore protection, and in dam facing and riverbank revetting.

Partners alter firm name

Richard R. Kennedy and Robert M. Kennedy, partners in the Engineering Office of Clyde C. Kennedy, have changed the office name to Kennedy Engineers to reflect the present partnership. The San Francisco firm will continue, with the same staff and organization, its consulting-engineering practice in the utilities and public-works field.

NSPE to present award

The National Society of Professional Engineers will honor William F. Ryan with its 1959 award for outstanding service to the engineering profession. Presentation of the award will be made at the society's annual banquet on June 20 in the Hotel Commodore in New York City. Ryan, a former vice president of Stone & Webster Engineering Corp., is also a former vice president and national director of the NSPE and a past president of the American Society of Mechanical Engineers.

Highway appointment

The North Carolina State Highway Commission has appointed R. B. Fitzgerald to succeed Ninth Division highway engineer Zeb Stewart, who will retire on July 1. In his new post, Fitzgerald will supervise the construction and maintenance of highways and county roads in Davidson, Rowan, Davie, Forsyth, and Stokes counties.

This roller, hardfaced with Victoralloy, shows practically no wear after crushing 40 tons of rock hourly, 8 hours daily for 30 days.

HOW TO SAVE ON ROLLERS AND ROD
....*Use VICTOR Hardfacing*

• FREE •
Victor Hardfacing Manual shows you right rod to use and how to apply it.
Write us NOW for your copy.

Profitable dealerships open; inquire now!

Tracy Rock & Gravel Co., Tracy, Calif., crushes 40 tons of rock hourly, prolongs roller life on this rough work by rebuilding with ¼" VICTORALLOY #1 Bare Electric rod, 28" length. Says plant superintendent Albert Parker:

> "Victoralloy's ease of application and fast buildup mean a lot to us. There is no lost time as we use 28" length rod; when it burns down, we touch a new rod to the old one, and keep on welding without even lifting the helmet."

You, too, can save rod and increase working life of crusher rolls, screens, shovel teeth, tractor rollers and idlers, dredge pumps and many other parts subjected to abrasion and severe impact. Simply hardface with VICTORALLOY. It welds to manganese, steel or cast iron. You get all position hardfacing, exceptional arc stability, deposits free of porosity, fast application without slag interference. Try it. Order a supply from your VICTOR dealer TODAY.

37 VICTOR for hardfacing

VICTOR EQUIPMENT COMPANY
ALLOY ROD AND METAL DIVISION
13808 E. Imperial Highway, Norwalk, Calif. • Wakita, Oklahoma

For more facts, use Request Card at page 18 and circle No. 426

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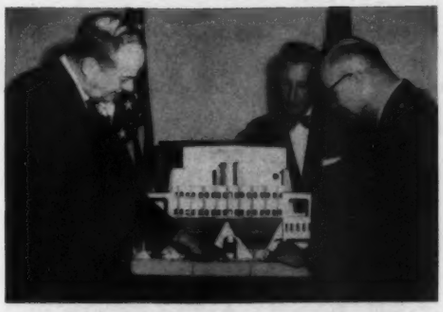

Henry G. A. Hayward, left, points out features of his prize-winning design of a new door and gear mechanism for hopper dredges to Brig. Gen. Clarence Renshaw of the U. S. Army Corps of Engineers, North Atlantic Division. Irvin T. Massey, center, who constructed the cross-section model, describes technical details.

Hopper-dredge design wins Corps award

Henry G. A. Hayward, chairman of the Hopper Dredge Board and chief of marine in the U. S. Army Corps of Engineers, North Atlantic Division, has received the highest civilian suggestion award in the history of the division. A check for $532.50 was presented to Hayward for his portion of the total award of $1,065, which he shared with Roland Charles of the office of the chief of engineers, Washington, D. C.

The award was for a new design for hopper-dredge doors and their gear mechanism. The new design will be incorporated in the hopper dredge Markham, now under construction. The dredge will be used to deepen harbors on the Great Lakes.

Wigton-Abbott elects

Ben Belkin has been elected a vice president and director of Wigton-Abbott Corp., Plainfield, N. J. Belkin has designed research laboratories and industrial buildings for the firm.

California highway news

J. P. Sinclair has been promoted to assistant state highway engineer for the California Department of Public Works. He succeeds B. W. Booker, who has retired. Sinclair was district engineer under Booker.

Kuljian awarded contract for Thailand power plant

The Kuljian Corp., Philadelphia, has been awarded a contract for a new semi-outdoor thermal power plant to be built in Bangkok as a major step in Thailand's electrification and industrialization program. The award calls for the design, engineering, construction supervision, and initial operation of the plant, which will be of reinforced concrete to the operating floor and structural steel above.

The initial installation, estimated to cost $17,500,000, includes one 77,000-kw hydrogen-cooled turbo-generator and one 580,000-pounds-per-hour steam-generator unit. The ultimate station capacity will be three 77,000-kw units and a 270,000-kva substation.

The state of Tennessee has issued $15 million in highway bonds, specially secured by road taxes. The issue was sold at an interest cost of 3.284 per cent to a syndicate headed by Chase Manhattan Bank and Harris Trust & Savings Bank.

WINSLOW—PORTABLE TRUCK SCALE

THE CONTRACTORS' SPECIAL SCALE

For use at temporary and permanent locations—at stock piles and by bituminous material contractors at the job site. Capacity: 15-18-20-30, 40 and 50 tons.

Write us for name of your nearest distributor.

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When you can tie and lock two concrete form panels in a few seconds, you're forming concrete fast! This is exactly what you can do with the UNI-FORM Panel System—the fastest system of forming concrete ever developed.

Faster tieing is only one of many UNI-FORM Panel features that makes them *the* pre-fab forms contractors are using on every kind of concrete construction. Write for the UNI-FORM Panel System Catalog and full details . . . or, call your nearby Universal Distributor or Branch Office for personal attention immediately.

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2. Steel frame provides structural strength and rigidity. Minimum alignment and bracing.
3. Best Exterior Grade Plywood face provides nailing surface. Easily turned for further reuses.

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LOS ANGELES SAN LEANDRO TORONTO

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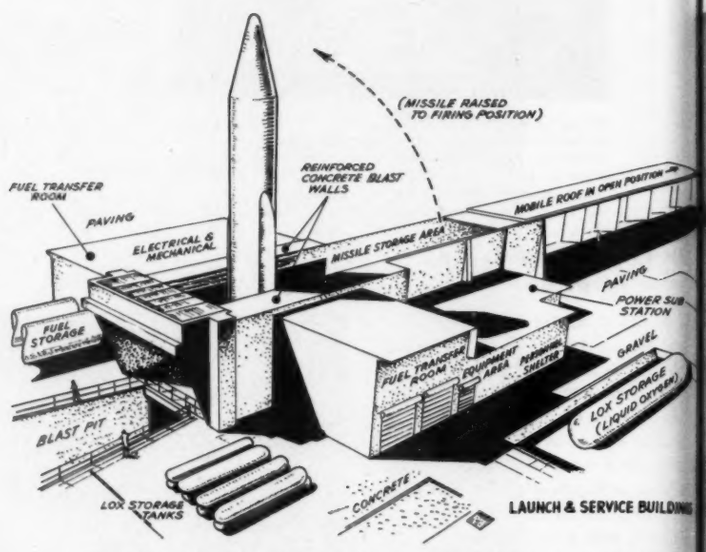
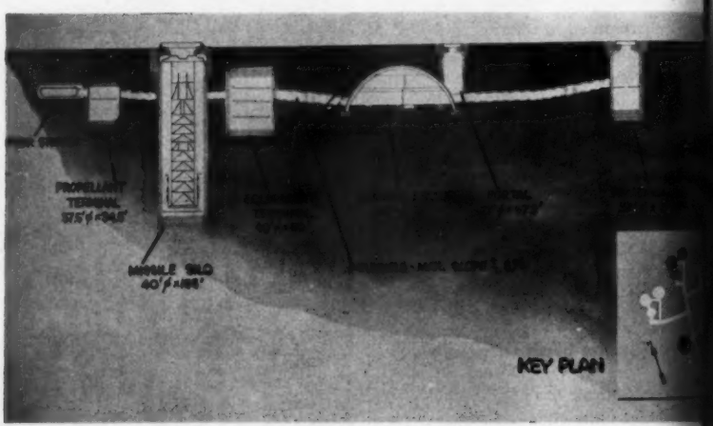
Big boom in missile

Six Atlas installations will be let within the rest of this year, each costing about $30 million. Atlas has its own individual construction requirements; for instance, about two thousand tons of reinforcing to give structures adequate blast resistance.



The sketch shows the various launch and service buildings required for the 75-foot-high "bird," which is fired above ground. One unusual requirement for Atlas is the large number of pressure vessels needed for storage of liquid gases.

Three Titan installations, each costing $45 million, are scheduled for awards in the next six months. This missile, stored, serviced, and fired from completely self-contained underground installations, presents some unusual problems for prospective contractors.



This cutaway of a complex shows the underground facilities in inside diameter, together with the mile of communications tunnels. The silo for the missile, with side walls of 2½-foot-thick concrete, will be built with slip-form methods.

There are millions of dollars' worth of work ready and waiting to be bid for construction of U. S. missile bases in the next six months. For those thinking of going into this kind of work, here is some background for this newest and increasingly important type of construction.

Most of the work, handled by the U. S. Army Corps of Engineers, is being done by contracts advertised and let through the district and division offices of the Corps. Corps headquarters in Washington make it very clear that as many contractors as possible are wanted to bid on the missile jobs, so that better prices may be obtained and the construction capacity needed for the missile program can be rapidly built up.

Contractors are urged to get themselves on the list at their nearest district or division office for notifications of jobs coming up. A list of the division offices appears with this article. Few of the jobs are so secret—at least in the construction phase—that complete plans cannot be immediately obtained.

ilbase work

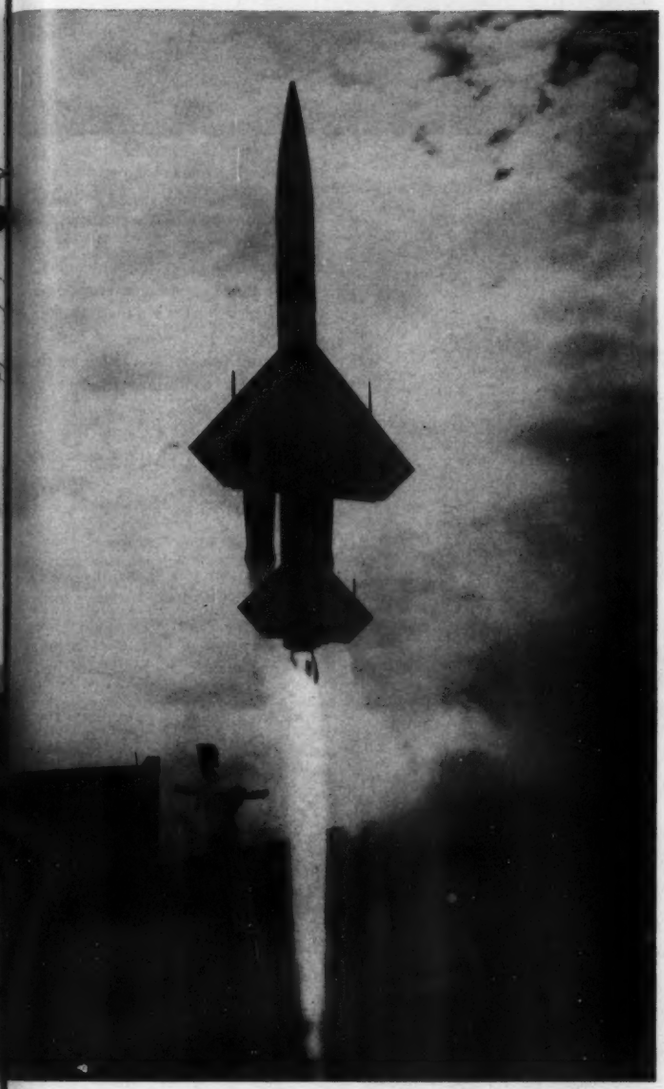
by E. E. HALMOS, JR.

The construction industry took a three-quarter-billion-dollar bite out of the $6.5 billion military missile business during fiscal year 1959, which ends July 1. It will take an even bigger bite—maybe a billion dollars—in fiscal year 1960. That takes no account of construction for purely scientific space exploration.

The government's chief construction agency in this field—the U. S. Army Corps of Engineers—is eager to have more of the construction industry come into the picture. It wants as many bids as it can get on the essentially heavy construction work involved.

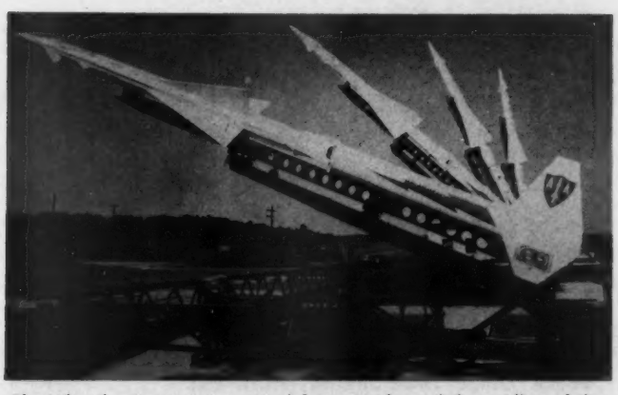
Information on the size of the military missile business itself, or any major segment of it, is very hard to come by in Washington today. That's partially because so much that's involved is secret or classified in some way; partially because of the vast and confusing overlapping of the government agencies concerned; and partially because of rapid changes in technology that sometimes make a missile obsolete before final working drawings are completed.

And of course, there is no well defined industry turning out missiles. Rather, the big "birds" are turned out by a vast complex that draws on many industrial fields for its know-how and technology. A piano builder,



...n Bomarc installations, costing $7 million each, are slated for award before ...ecember. The missile, designed as an enemy-plane interceptor, is not a true ...issile, although it can carry an atomic warhead over a range of about 400 miles.

Bomarc has its own special requirements: a special launcher-shelter with retractable cover, a mechanism to raise the "bird" to firing position, control facilities, housing for launching crews, and fuel storage.



The Nike, the Army's interceptor defense missile, and the smallest of the four, will have bases totaling $20 million under contract by the start of 1960. These smaller missile bases generally go to a single contracting firm.

BIDS COMING UP ON MISSILE CONSTRUCTION WORK

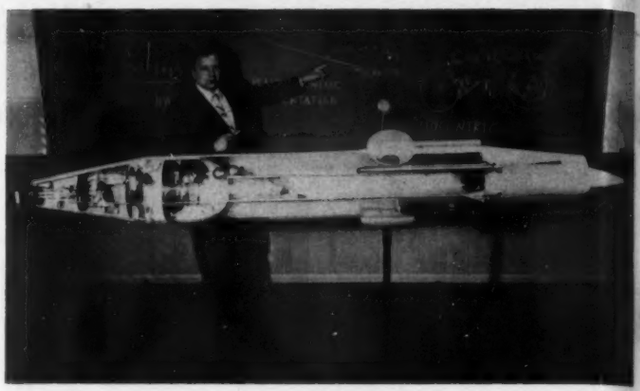
(To be advertised by appropriate district office, Corps of Engineers)

BOMARC—Ethan Allen AFB, Vt.	June
Truax Field, Wis.	June
Vanderberg AFB, Calif.	June
Travis AFB, Calif.	June
ATLAS—Forbes AFB, Kans.	June
Fairchild AFB, Wash.	July
Schilling AFB, Kans.	August
TITAN—Ellsworth AFB, S. Dak.	August
Lincoln AFB, Nebr.	October

(Atlas and Titan bases will cost an estimated $300 million; the Bomarc bases cost an estimated $7 million apiece. Work on the Nike bases is so scattered that an accurate list of contract dates must be obtained from individual Corps district offices.)

A typical Nike-Hercules installation covers an area 2,700 feet long and 1,800 feet wide, with facilities for launching 12 missiles. Nikes are grouped in fours; groups, requiring a reinforced-concrete pad, are surrounded by a 10-foot-high berm that is about 50 feet wide at the base.

The future holds plenty of construction work on launchers. A manned space vehicle will require a facility capable of launching a heavy missile that carries the astronaut, food, atmosphere—and all things to sustain life in space.



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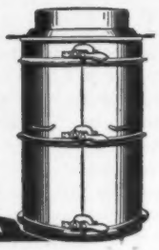

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(Continued from preceding page)

several milk-products companies, and watchmakers are only a few of the concerns that make missiles today.

Most figures available from agencies concerned with missiles also lump construction in the general category of "ground support"—a category that includes air conditioning, electronic devices, radio and radar, pumps, and the like. The best guess is that, for every dollar spent on the missile itself, something like two dollars goes into ground support of all types.

Spending last year

Working on this basis, and adding up expenditures from various sources, we arrive at what is probably a good approximation of how the spending has gone during the past fiscal year. It adds up this way:

- For missiles themselves, about $1.25 billion.
- For construction alone, about $750 million.
- For other support facilities, about $500 million.
- For electronics components, about $2 billion.
- For research and development, about $2 billion.

Some idea of the construction industry's contribution to the field can be drawn from the recent bidding on just one complex of Titan intercontinental ballistic missiles at Lowry Air Force Base in Colorado (an installation for three missiles). The low bidder put in a price of $40.7 million for the installation.

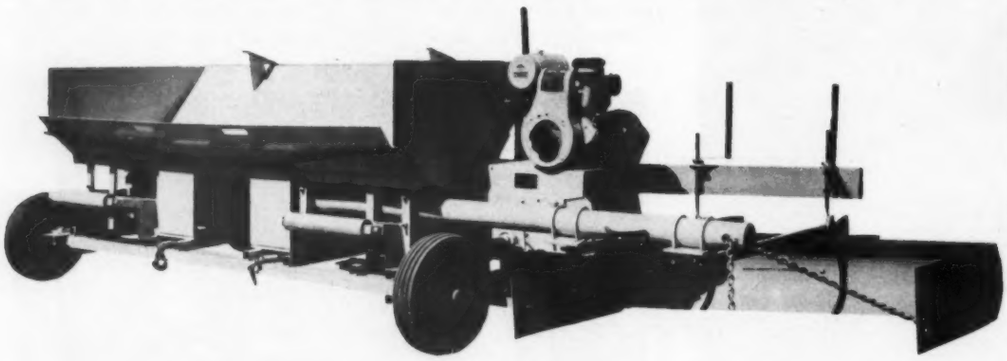
Work this year

Within the current calendar year, bids will be taken for construction work on these jobs in the continental U. S. alone:

- Six Atlas squadron installations, at an estimated $30 million each. Four others are already under construction.
- Three Titan squadron installations, at about $45 million each.
- Ten Bomarc installations, at about $7 million each. Four others are already under contract.
- About $20 million worth of work on bases for the Nike series of missiles that are at the moment the basic defense for most U. S. cities.

As to what's ahead, the Military Construction Bill (HR 5674) provides a total of about $496.5 million for direct construction for missiles, plus

New Power-Pack for Road Widening and Shoulder Work . . .



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The new model 605 Power-Pack with improved strike-off speeds up the work and saves you money on any road widening or shoulder job. This unit attaches quickly to any truck and handles sand, stone, aggregate or hot-mix. The strike-off is easily adjusted to working widths from 2 to 5 feet. Hand screw adjustment assures accurate grade up to 5 inches above or below the pavement.

Check these cost saving features:

- **Releases more costly equipment for other jobs**
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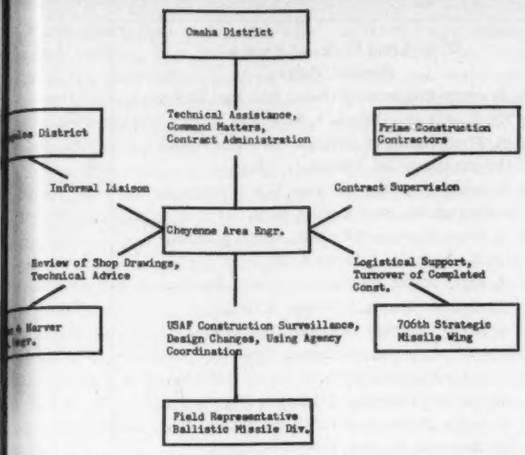
Omaha District
Technical Assistance, Command Matters, Contract Administration
Prime Construction Contractors
Informal Liaison
Contract Supervision
Cheyenne Area Engr.
Review of Shop Drawings, Technical Advice
Logistical Support, Turnover of Completed Const.
USAF Construction Surveillance, Design Changes, Using Agency Coordination
706th Strategic Missile Wing
Field Representative Ballistic Missile Div.

A typical construction setup for a firm working on an Atlas installation.

nearly $350 million more for construction of other facilities associated with the "birds," for fiscal year 1960.

And all of those figures take no account of other construction generated by the missiles, such as expansion of factories to produce the implements and additions to military installations to house personnel.

The biggest share of the 1960 missile money for construction, by the way, goes to the Air Force, which is down in the bill for a total of $374 million for construction for missiles, plus $44.5 million for construction of warning devices and the like.

Basically, construction for missiles falls into the category of heavy construction. It involves thick reinforced-concrete pads for launchers, heavy blockhouses to shelter personnel and equipment, considerable earthwork (tunneling in some instances), and large quantities of materials.

It also involves a lot of work for specialty contractors, particularly in plumbing, electrical wiring, and construction techniques. The "plumbing," incidentally, is a very special job and often involves miles of stainless-steel tubing, sometimes with walls an inch thick and installed under aseptically clean conditions, that can withstand pressures of 15,000 psi or more.

In order to decide what's involved in any job, a contractor can divide the field roughly into four categories of missile families. The type of missile controls the installation.

For convenience, the breakdown can be made like this:

- Bases for ICBM's (principally the Air Force's Atlas and Titan).
- Bases for Bomarc (the Air Force's supersonic interceptor).
- Bases for the Nike series (Army interceptor defense missile).

A brief rundown on the missiles themselves and what's involved by way of construction for them, completes the picture:

Atlas: This huge war machine was the first intercontinental ballistic missile developed to the production stage. It is housed and fired from installations above the ground at the present time.

The missile itself stands 75 feet high on its launching pad (supported by a movable launcher), is 10 feet in diameter, weighs 243,000 pounds, has a range of 6,200 miles, can develop a speed (within seconds of launching) of 16,000 mph, develops 300,000 pounds of thrust on takeoff from its two liquid-fueled engines.

Constructionwise, a 3-missile installation recently bid calls for quantities of materials like this:

Structural steel, 1,140 tons; reinforcing steel, 1,950 tons; mechanical steel items (plumbing and tanks for fuel), 8,040 tons; electrical wiring, 1,430 tons; concrete block and prestressed members, 4,350 tons; cement 6,300 tons; concrete aggregate, 37,460 tons; road aggregate, 66,120 tons; asphalt, 800 tons; miscellaneous materials (wood, wire, etc.) 1,260 tons.

There are some unusual construction requirements. For the storage of liquid gases (oxygen, nitrogen, and helium) there are 192 pressure vessels, of sizes up to 28,000 gallons. Fuel and process piping are of heavy-wall stainless steel, to operate at pressures up to 15,000 psi, and they must be cleaned by vapor degreasing and chemical processes. All buildings contain unusually large quantities of reinforcing steel to provide blast resistance.

Titan: This is the newest of the ICBM'S to become operational. Liquid-fueled, like Atlas, it is stored, serviced, and fired from completely

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Now 563 total h.p.!

No other scraper gives you all the features you get in the TS-24 "Euc"

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- 2 Torqmatic Drives
- No spin differentials
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- 27.00x33 tires (33.5x33 optional)

Euclid's TS-24 Scraper, with power increased to 563 h.p., now widens its lead in performance over every other scraper in the field. With a 336 h.p. engine in the tractor and 227 h.p. at the rear, this "Twin" is unsurpassed in productive capacity.

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Its big power, big capacity and big performance has helped contractors, mines, quarries and industrial users to beat the pinch on profits.

Have a Euclid dealer show you how the "Twin" can bring a better return on investment . . . on your present or future work. He'll give you all the facts and can probably arrange a demonstration for you.

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(Continued from preceding page)

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Division Offices

U. S. Army Engineer Division, Missouri River,
206 S. 19th St., Omaha 1, Nebr.
U. S. Army Engineer Division, New England,
150 Causeway St., Boston 14, Mass.
U. S. Army Engineer Division, North Atlantic,
90 Church St., New York 7, N. Y.
U. S. Army Engineer Division, North Central,
536 S. Clark St., Chicago 5, Ill.
U. S. Army Engineer Division, North Pacific,
210 Custom House, Portland 9, Ore.
U. S. Army Engineer Division, Ohio River,
315–335 Main St., Cincinnati, Ohio
U. S. Army Engineer District, South Atlantic,
536 Old PO Building, Atlanta 1, Ga.
U. S. Army Engineer Division, South Pacific,
630 Sansome St., San Francisco, Calif.
U. S. Army Engineer Division, Southwestern,
1114 Commerce St., Dallas 2, Texas

Campbell Cab for "Caterpillar" Tractor

D7-210 for D7 17A series tractor and D7-224 for D7 3T series tractor

WINDOWS—safety glass windows throughout. Sliding windshield glass.
CONSTRUCTION—all steel.
COLOR—painted yellow to match color of tractor.

DOORS—two heavy-duty sliding doors provide easy entrance and exit for the operator. Doors can be latched in an open or closed position.

MEASUREMENTS—	D7-210	D7-224
	length 56"	length 54"
	width 65"	width 65"
	height 58"	height 58"

OPTIONAL EQUIPMENT—windshield wiper, sun visor, locking handles, heater-defroster unit.

CAMPBELL DETACHABLE CAB CO. • WAUCONDA, ILLINOIS

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Keep Your Product ON the Job and OUT of the Shop with KEY Drive JOINTS

MECHANICS Roller Bearing UNIVERSAL JOINTS drive through hardened integral KEYS—not bolts nor screws that often wear loose. Heavy KEYS (a) on the bearings and corresponding keyways (b) in the flanges, accurately machined out of solid metal, transmit all of the torque. Two cap screws (c) hold each bearing securely in place against the flange. This is their only function. They are locked in position, when assembled, and have a high factor of safety. This stronger, safer, KEY method of transmitting the torque in MECHANICS Roller Bearing UNIVERSAL JOINTS helps avoid costly delays, break-downs and unnecessarily frequent laying-up for joint replacements. Let our engineers show you how this exclusive MECHANICS Roller Bearing UNIVERSAL JOINTS advantage will help improve the operation of your product.

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self-contained underground installations. Some idea of the problem this involves can be gathered from statistics on the missile itself: It is 90 feet in over-all length, 10 feet in diameter, weighs 222,000 pounds, has a 5,500-mile range, can develop speeds up to 15,000 mph, and its two engines produce 300,000 pounds of thrust.

A 3-missile complex requires such facilities as these, all in underground installations: Two antenna silos, each 27 feet in diameter and 65 feet deep; a control center that is a hemisphere 99 feet in diameter, and which also provides living quarters on a lower level; a powerhouse, also a hemisphere, 105 feet in diameter, to house four 1,000-kw diesel generators; three equipment terminals, each 40 feet wide×50 feet deep; three propellant terminals, each 37 feet wide×35 feet deep; three propellant storage areas, 29 feet deep; and three missile silos, each 45 feet in diameter and 165 feet deep. These installations, which occupy a space of about 60 acres, are interconnected by nearly a mile of communications tunnels, 10 feet in diameter.

The big silos to house the missile itself will have an 8-foot-thick reinforced-concrete pad at the bottom, and side walls of reinforced concrete about 2½ feet thick. As planned, concreting will be done by slip-form methods very similar to those used in constructing grain silos.

Since the installations are completely underground and must be self-contained, they are also equipped with complete air-conditioning and air-cleaning devices, as well as the generators, living quarters, waste-disposal systems and the like.

Bomarc: Basically a pilotless airplane, the air-breathing Bomarc is planned for use as an interceptor against enemy planes and is not a true missile, although it can carry an atomic warhead over a range of about 400 miles. The 47-feet-long-long weapon is fired almost vertically from a specially built launcher-shelter, which opens automatically and pulls away as the weapon is elevated to firing position. Bomarc's liquid-fueled engines develop about 42,000 pounds of thrust, and the weapon is the only U. S. "bird" in the medium range.

Construction for it includes the shelter building and its retractable cover, the mechanism to raise the missile to firing position, fuel-storage facilities, control facilities, and housing for launching crews.

Nike: This relatively small missile (about 30 feet long), is relatively slow (up to 2,200 mph) and relatively short-range (up to 75 miles), and right now is the main defense of most American cities. A Nike "family" — Nike-Ajax, Nike-Hercules — has been developed, with newer versions replacing older ones as they come off the production lines.

There are at present more than 100 Nike installations in the United States.

Construction for these missiles falls into the category of somewhat lighter work, since they are propelled by solid fuels (they need no extension fuel-storage areas), are launched from their own launchers, and are highly mobile.

But the conversion of existing bases to handle newer, larger, and more powerful missiles is a costly item. In fiscal year 1959, for instance, something over $70 million was spent on construction alone to handle conversion to the Hercules series. (An even later version—Nike-Zeus—will require really major changes in existing bases—if it's possible for them to be used at all for the weapon. This version has now become something close to an intermediate-range missile, capable of carrying an atomic warhead, and may replace Bomarc.)

Typical construction for a Nike-Hercules installation is done in an area 2,700 feet long×1,800 feet wide, which contains facilities to launch 12 missiles. The missiles are grouped in installations of four, and each group is being surrounded by an earth berm about 10 feet high and 50 feet wide at the base.

Each group requires a reinforced-concrete pad 25 feet wide×70 feet long, varying in thickness from 1 foot 5 inches at the center. In addition, there are control structures and service structures of varying sizes and purposes, all of reinforced concrete and protected by similar earth berms, plus service roads and other facilities. (The launching groups, incidentally, are covered by a plastic sheeting, designed to be torn away when the missiles are fired. It is replaced later by another sheet.)

Who handles work

Nearly all the military missile work in the continental United States is handled by the Army's Corps of Engineers. (Most Navy missile work is concentrated on ship-based missiles, such as Polaris, and does not require land-based construction.) This includes not only work for missiles themselves, but also construction for warning systems such as the SAGE (semi-automatic ground environment) and DEW lines, "Missile Master" (control centers), and other systems.

All of the construction work is being handled by contract, despite the fact that the advent of missiles has forced a major change in Corps engineering and design procedures.

Normally, on such engineering work, the user agency develops its own hardware and requirements, and the Corps designs the facilities to handle them. For instance, the Air Force designs its own planes; the Corps, the airfields and other facilities to service them. But missiles don't often fit into this procedure, since they often require the development of a whole complex of integrated facilities, as well as the missile itself.

Because of this, the Corps now sometimes works with the developers of the missiles, in order to develop criteria for designing the ground-support facilities.

However, construction contracts are advertised and let through the

(*Continued on next page*)

Average bid prices for federal-aid highway construction continue to fluctuate within a very small range, according to the Bureau of Public Roads. The price index, using 1946 as the base year, declined from 141.6 for the fourth quarter of 1958 to 140.8 for the first quarter of 1959.

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Spreads Salt or Chloride for DUST CONTROL or SOIL STABILIZATION

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Lindenwood, Illinois

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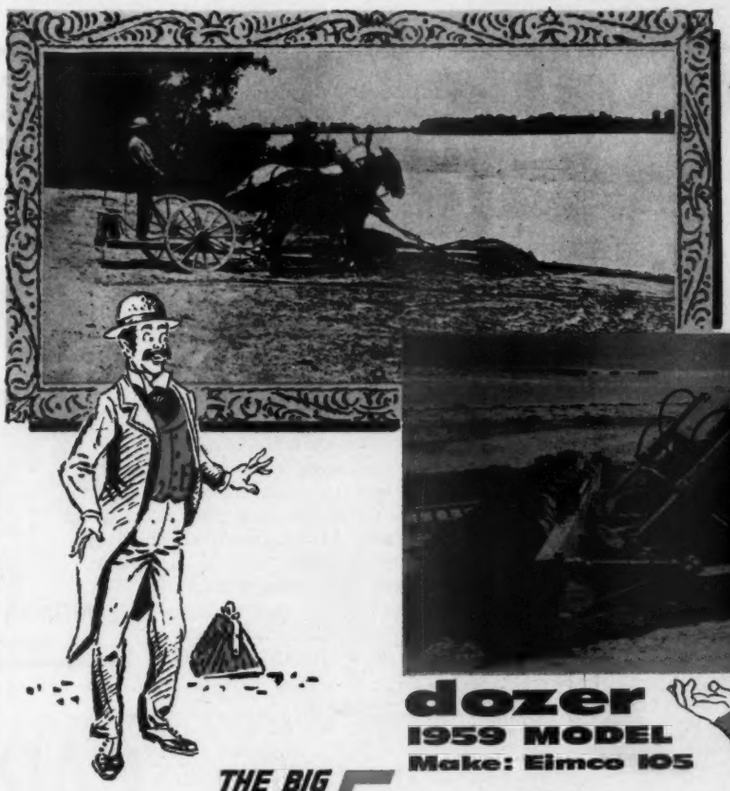
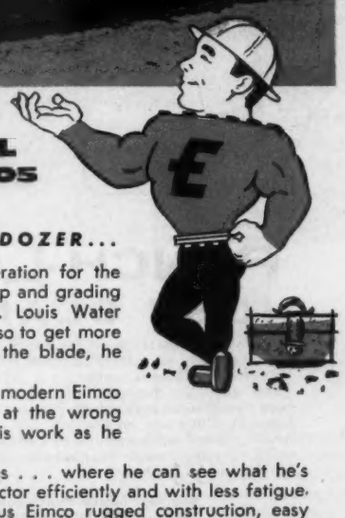


dozer
1917 MODEL
Make: Frazier-Davis Construction Co.

dozer
1959 MODEL
Make: Eimco 105



THE BIG E THE MODERN BULLDOZER...

Only forty-two years ago, this two mule-power dozer was in operation for the Frazier-Davis Construction Company of St. Louis, handling final clean-up and grading for the intake chamber on the Missouri River development of the St. Louis Water Works at Hine, Mo. The blade up ahead was rotated over the axle, so to get more weight on the blade, the operator simply walked forward. To raise the blade, he stepped to the rear.

What a difference today . . . If the dozer you are comparing is the modern Eimco 105! Because even today, most other tractors **still** have the operator at the wrong end of his horsepower . . . nearly as far away from the blade and his work as he was in 1917!

Only the Eimco 105 puts the operator up front, where he belongs . . . where he can see what he's doing. See his work. See stumps and obstacles. Guide and work his tractor efficiently and with less fatigue for more work output, greater safety and control. All this, plus famous Eimco rugged construction, easy maneuverability, greater stamina and more efficient and effective utilization of power through Eimco's unique power-team of modern engine - torque converter - Unidrive - Dual Final Drives.

You can't know what a **really modern** tractor can do for you unless you have job-tested the Eimco 105. Call any Eimco branch for a demonstration on your own job-site . . . or write The Eimco Corporation, P. O. Box 300, Salt Lake City 10, Utah for specifications and all the facts of modern tractor design and engineering.

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For more facts, use Request Card at page 18 and circle No. 435

(Continued from preceding page)

district and division offices of the Corps, depending on the location of the facility.

Because of the complexity of the work and the special techniques required for the ICBM's, most of the bids for these installations have been joint-venture affairs. For example, the low bid on the Titan installation at Lowry AFB was submitted by a four-member joint venture, headed by Morrison-Knudsen, and including Paul Hardeman, Inc., of Los Angeles; Johnson, Drake & Piper of New York; and F. E. Young Construction Co. of San Diego.

In the categories of the smaller missiles and facilities to serve them, most of the awards have been to single construction organizations. An example is the recent award of a $2 million contract to Corbetta Construction Co. for work at Arlington Heights, Ill.; and a $1.8 million contract to Stolte, Inc., for missile work at Fort MacArthur, Calif.

For the future

It is apparent that the construction share of missile work must increase rapidly, at least for several years, as more missiles are placed ready for an action that it is hoped may never come.

Within a few years, the individual cost of the installations may be reduced drastically—particularly with the development of some of the newer missiles, such as Minuteman, which will be solid-fueled "birds" and won't require elaborate storage and servicing installations.

There is no doubt, however, that the number of installations will increase. And, beyond the immediate requirement for defensive and offensive weapons, there is the rapidly approaching prospect of space flight by manned vehicles.

The moment a man steps into a missile, the requirements for ground support multiply rapidly. Greater safety requirements are a must on the ground; more elaborate tracking and guidance systems must be provided; better communications are needed.

And a man will have to carry along with him his own atmosphere, pressure, waste-disposal system, food, and the like, and this will add greatly to the weight of the vehicle. Hence bigger and more powerful propulsion systems are a requirement, together with larger ground installations.

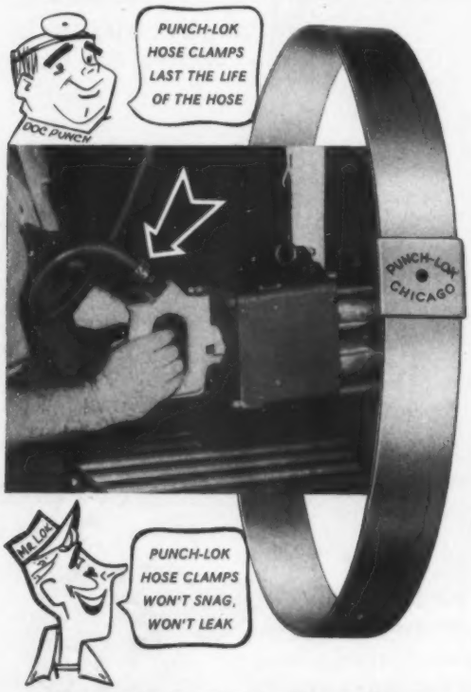
There is no doubt that manned vehicles will be launched into space within the measurable future and that such flights will eventually lead to landings on the moon or the planets. And that will bring with it real construction problems in another environment—on another world.

THE END

New C.I.T. representative

Joseph M. Taylor has been named to represent C.I.T. Corp., in central Mississippi. He will make his headquarters in Jackson, Miss. Taylor was formerly with the company's Memphis, Tenn., division.

small components do a
BIG JOB!


PUNCH-LOK HOSE CLAMPS LAST THE LIFE OF THE HOSE
DOC PUNCH
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MR. LOK
PUNCH-LOK HOSE CLAMPS WON'T SNAG, WON'T LEAK

PUNCH-LOK
HOSE CLAMPS

. . . are very small in comparison to many of the machines on which they're installed, but PUNCH-LOK Hose Clamps do a BIG, BIG job. Their absolute dependability in clamping vital hose connections makes high production schedules possible. They are on the job day after day . . . never require maintenance or repairs. Easy and quick to apply, once clamped they stay clamped for the life of the hose.

See your nearby Punch-Lok distributor or write for free descriptive catalog.

"The sign of a GOOD Hose Clamp"

PUNCH-LOK Company

Dept. J, 321 N. Justine Street, Chicago 7, Illinois

For more facts, circle No. 436

Case history

Air-supported shelter permits sub-zero pours

A construction shelter supported by thin air enabled the Culligan Co., of Sioux Falls, S. Dak., to keep construction crews busy during rugged winter weather without resorting to more costly temporary shelters. The shelter was an inflated "bubble" of Visqueen polyethylene film covered by a net of canvas webbing to resist wind whip.

Comfortable temperatures were maintained inside the plastic dome, allowing concrete to be placed during a 20-degree-below-zero cold spell, and with winds up to 50 mph.

Culligan was able to cut lighting costs inside the shelter since translucent film admitted daylight without glare.

For further information write to the Plastics Division, Visking Co., Dept. C&E, 6733 W. 65th St., Chicago, Ill., or use the Request Card at page 18. Circle No. 150.

SOLO CONCRETE VIBRATOR

The only NEW DEVELOPMENT IN CONCRETE VIBRATORS IN 25 YEARS! 25,000 V.P.M.—"higher than hi-cycle"—this one man tool saves you $25 per day. It eliminates eccentric bearings and puts the $40.00 per 100 hours you normally pay for bearing replacement *right back in your pocket.*

Write for free demonstration. There's a PM Field Engineer near you.

Pacific Mercury
14052 Burbank Blvd.
Van Nuys, Calif.

Manufacturers of the Thomas Electronic Organ

For more facts, circle No. 437

Harbormaster
the complete, heavy-duty marine power and steering package

easily installed, rugged, economical, highly maneuverable

Harbormaster Outboard Propulsion and Steering gives your craft rugged power, plus complete 360° maneuverability and the advantages of low cost installation, operation and maintenance.

Harbormasters are easily installed for immediate use and are a ready answer to many tough marine problems. They are ideal in shallow or deep water . . . for coastwise service as well as in harbors, lakes, canals, and rivers.

Harbormasters have been proved in hundreds of installations. Send for your copy of catalog which gives complete details.

MURRAY & TREGURTHA, INC.
44 Hancock St., Quincy 71, Massachusetts

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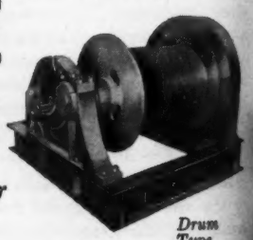
CARPULLERS & BARGE MOVERS

Save Time • Manpower Handling Delays



Drum Type

Capstan Type

Why not apply Mechanical Units designed and built by Superior-Lidgerwood-Mundy Corporation to meet your exact need?

Write for Bulletins and Catalogs

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION
Main Office and Works: SUPERIOR, WISCONSIN, U.S.A.
New York Office, 7 Day Street, New York 7, N. Y.

For more facts, circle No. 439

Case history

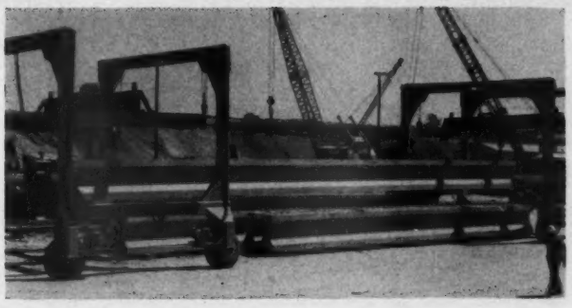
Straddle units cut costs for prestress company

Faster handling of beams, reduced manpower, and more efficient stockpiling are among the advantages realized by a Chicago prestressed-concrete manufacturer with a pair of Travelift straddle cranes.

Since purchasing the two units, the Material Service Corp. has cut drastically the time required to strip beds, move beams to stockpiles, and load trucks or flatcars. In a single instance, the cranes loaded, in 45 minutes, 7 huge beams scattered about the yard; a standard crane, it was estimated, would have taken about 3 hours to do the same job. The Travelifts can move the length of the yard in 10 minutes, while other cranes took 45 minutes to move this same distance.

Because they are simple to operate, the Travelifts do not require the skilled labor that standard cranes do, the owner reports.

For further information write to Travelift & Engineering, Inc., Dept. C&E, Sturgeon Bay, Wis., or use the card at page 18. Circle No. 162.



Travelifts pick up a prestressed-concrete beam to be used on the Illinois Toll Road.

Prescon appoints

The Prescon Corp., Corpus Christi, Texas, has named Harold L. Nelson of Albany, N. Y., its northeastern sales representative. He will be available for assisting with design and engineering utilizing the Prescon system.

Michael A. Cassaro, structural engineer, has been transferred from the company's Southwestern Division to the Pacific Coast Division offices in Los Angeles.

Case history

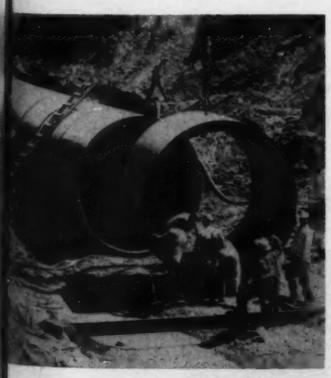
Use of concrete pipe saves government $90,000

A single line of 108-inch-diameter concrete pipe furnished by American-Marietta enabled the U. S. government to effectively carry a diverted creek under Griffiss Strategic Air Command runway at Rome, N. Y., at a big saving.

Originally, a twin 84-inch line of another material was specified, but A-M engineers pointed out that the smoother surfaces of concrete pipe would permit use of smaller, more efficient sizes and save about $37 per linear foot, or a total of $90,000.

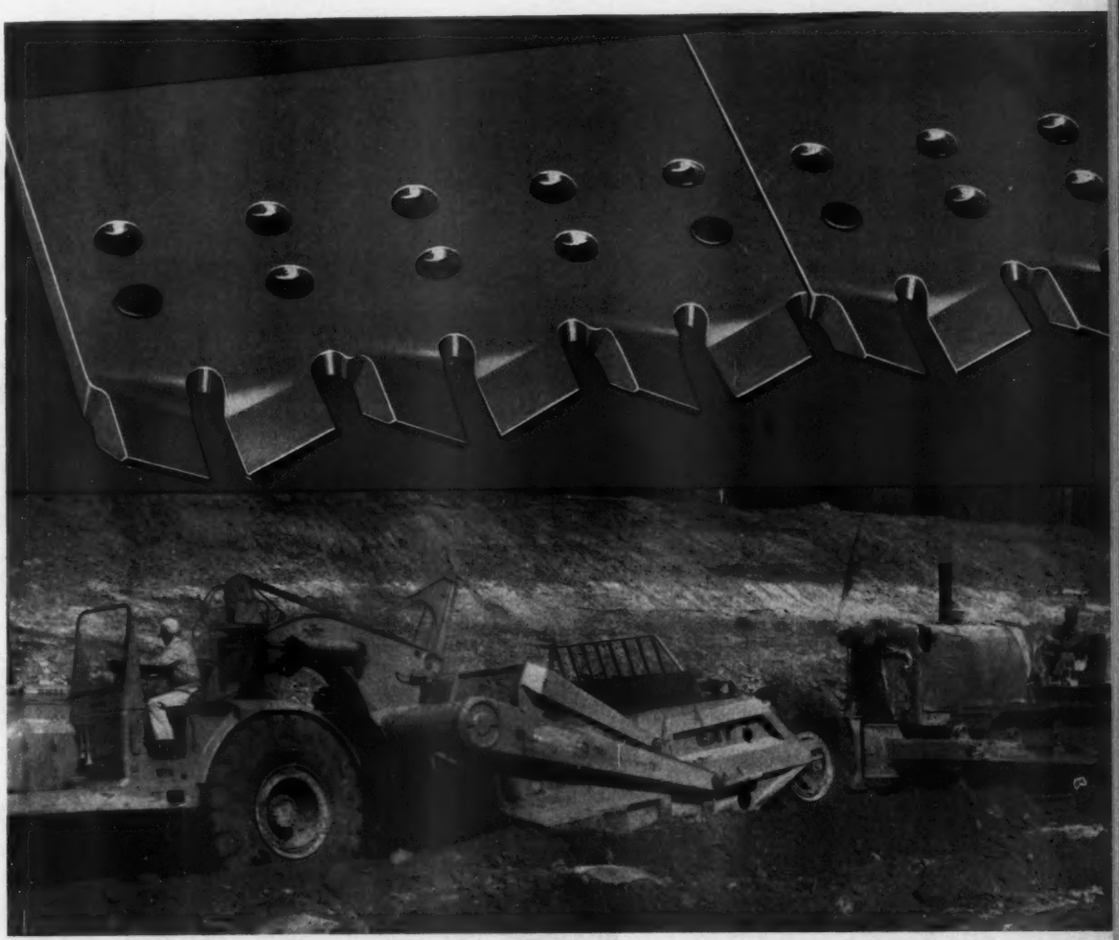
George M. Brewster & Son, Inc., Bogota, N. J., held the $16.7 million primary contract for runway construction.

For further information write to the American-Marietta Co., Dept. C&E, 101 E. Ontario St., Chicago 11, Ill., or use the Request Card at page 18. Circle No. 39.



The use of American-Marietta 108-inch-diameter concrete pipe on a government job at Rome, N. Y., effected a reported saving of about $37 per linear foot. Prime contractor for the job was George M. Brewster & Son, Inc., of Bogota, N. J.

For more facts, circle No. 440→



Outwear ordinary blades 4 to 1

'GATOR TWISTOOTH™ Blade

BEST BLADES MADE Shunk

After 48 working days on the new North-South Ohio Freeway project, a nationally known contractor compared Shunk 'Gator Twistooth Blades with conventional scraper blades. The firm's project foreman outlined the comparison this way:

"This job involves moving over 2,500,000 cu. yds. of hard and soft sandstone and overburden. We're using DW-20 and DW-21 tractor-scraper units. Two of these combinations are equipped with Shunk 'Gator Twistooth Blades. There's no question about it, these blades chew up the material . . . reduce over-all jar . . . help us get full loads in fast time . . . and they've already outlasted four or five sets of ordinary scraper blades!"

The project superintendent confirmed this comparison: "Standard straightedge scraper blades wore out in ten days to two weeks, but the Shunk 'Gator Twistooth Blades have been on the job ever since we started almost two months ago!"

Shunk 'Gator Twistooth Blades can give *you* this kind of performance. Write today or call your nearest Shunk Dealer . . . for complete details on the most profitable blade ever built . . . for scrapers, 'dozers, graders and bucket loaders. Try the 'Gator Twistooth Blade at the earliest opportunity . . . *and compare it yourself!* Watch it outperform any blade you've ever used!

Over 100 years of service to the earthmoving industry

Shunk Manufacturing Company, Bucyrus, Ohio

By building a warehouse at this remote site for the Newman Power Station of El Paso Electric Co. near Newman, Texas, Stone & Webster Engineering saved $50,000 that would have been needed if materials were handled at rail and truck unloading facilities 14 miles away. Near the warehouse, the first construction buildings are made ready for the job.

By establishing rail, truck services to isolated site

Traffic departm ves on

Job management saved $50,000 on construction of the Newman Power Station for El Paso Electric Co., even before the job got under way near Newman, Texas.

Stone & Webster Engineering Corp., Boston and New York City, which held the contract, was able to cut job costs at the very start by planning for rail and truck service to the remote job site, which is 18 miles from the nearest major city and 14 miles from the nearest rail facility. There were no motor-truck nor carloading-company rates applicable to this point.

Rather than establish a warehouse at Planeport, Texas, the closest railhead, where less-than-carload shipments could be accepted, Stone & Webster's Traffic Department decided to establish rail, truck, and carloading services to handle material and equipment for the site. This, in effect, meant the creation of an entirely new station on the trucking map of the country.

But the alternative would have required not only a warehouse at Planeport, but also additional personnel to staff the facility—an additional expense for El Paso Electric. Using past experience as a yardstick, engineers estimated that the total job would require 150 to 200 carloads of material. With a warehouse at the job site, costs of shipments to the job would be reduced by about $50,000.

The first step to establish the required rates and services was to negotiate with the railroads serving the area. Southern Pacific Lines, which serves Planeport, agreed to a "free door delivery," with Newman indicated as a delivery station. Two other rail carriers, the Texas & Pacific Railway Co. and the Santa Fe Railway Co., also arranged free delivery to Newman.

Completion of these arrangements solved part of the transportation problem and eliminated expenses for trucking beyond the railhead on less-carload-lot shipments, not only during construction work but on all future shipments to the plant.

Handling carload freight to the job site was also part of the negotiations connected with railroad shipments. Equitable rates from El Paso were provided by Southwestern Transfer Co. This was important since rail service to El Paso is better than that to Planeport and so the delivery time was considerably reduced.

NEWS about a bigger-than-eve Koe

Presenting... 2 NEW CRANES

35-TON 435 TRUCK CRANE

Big, heavy-duty . . . with plenty of load stability on or off-pavement . . . new Koehring® 435 truck crane safely lifts up to 35 tons, with 40-foot boom at 15-foot radius (based on 85% rating). Removable counterweight, boom, outriggers reduce weight well within highway load-limits.

Now, meet the new 330 truck crane (below) . . . latest addition to the big Koehring line on rubber . . . with 30-ton lift capacity . . . 30 to 120 feet of main boom *plus* 15 to 30 feet of jib. Power-lowered A-frame removes the counterweight for highway travel . . . same system speeds re-assembly at next job.

30-TON 330 TRUCK CRANE

Quick facts on KOEHRING WORK CAPACITY:

	MODEL	TYPE OF MOUNTING	CRANE LIFT CAPACITIES (Rubber-tired machines rated at 85% of tipping load.)	
ON RUBBER	200	3-axle truck, or 21.5 mph Cruiser	50,000 lbs.	at 12-ft. radius
	205	3-axle truck, or 18 mph Cruiser	50,000 lbs.	at 12-ft. radius
	230	3-axle truck	60,000 lbs.	at 12-ft. radius
	430	4-axle truck	70,000 lbs.	at 15-ft. radius
	545	4-axle truck	90,000 lbs.	at 15-ft. radius
ON CRAWLERS		Size shovel	CRANE LIFT CAPACITIES (Crawler ratings based on 75% of tipping load.)	
	202	½ Cu. Yd.	20,000 lbs.	at 10-ft. radius
	205	¾ Cu. Yd.	30,000 lbs.	at 12-ft. radius
	402	1 Cu. Yd.	40,000 lbs.	at 12-ft. radius
	545	(Crane only — 85% rating)	90,000 lbs.	at 12-ft. radius
	605	1½ Cu. Yds.	72,300 lbs.	at 12-ft. radius
	805	2 Cu. Yds.	104,200 lbs.	at 12-ft. radius
	1205	3 Cu. Yds.	190,600 lbs.	at 15-ft. radius

...nagement

...ves $50,000

on power-station project

E. C. Ness, Jr., left, traffic manager for Stone & Webster Engineering Corp., confers with J. T. Clark on establishing rail, truck, and carloading service to the isolated site of the Newman Power Station.

The second step in the traffic procedure was arranging for the handling of motor-truck shipments with firms servicing the Newman area.

Tariffs and rates

As a result of negotiations by the Traffic Department of Stone & Webster, seven traffic bureaus, which issue tariff publications, added Newman as a point of destination for truck shipments. In effect, this provides truck service from practically any point in the country to Newman, at the same rates that apply to El Paso.

Bureaus taking this action are: Rocky Mountain Tariff Bureau, Southwestern Motor Freight Bureau, Middlewest Freight Bureau, Eastern Central Motor Carriers Association, Southern Motor Carriers Freight Conference, Arizona Motor Tariff Bureau, and Interstate Freight Carriers Conference.

The final step in the operation was to establish shipping rates to the site by various carloading companies in the area. These companies, like the railroads, set up rates and services to Newman as a delivery station, with the same tariffs that apply to El Paso. Completion of these negotiations with railroads, truckers, and carloading firms not only reduced transportation costs, but speeded up deliveries, which also contributed to savings in total construction costs. THE END

...ve Koehring fleet.....ON RUBBER

15-TON
205 TRUCK . . . OR CRUISER

Koehring 205 rubber-tired crane is available on truck mounting (below) . . . or as a 21.5 m.p.h. one-man-operated Cruiser crane. On either type mounting you get 15-ton lift capacity. Highway ...avel is unrestricted in most areas ...en when carrying 25-foot ...m. Overall widths: 8 feet.

One man controls all operations . . . one engine supplies all power for work and travel on Koehring 3-axle 305 Cruiser crane (below). It safely lifts up to 25 tons. Travels at speeds up to 18 m.p.h. . . . has smooth, torque-converter drive . . . automotive-type power steering . . . and short 27 foot-9¾ inch turning radius. Gradability: 28%. Booms: 30 to 100 feet, *plus* 15 to 30-ft. jib!

25-TON
305 CRUISER® CRANE

25-TON
305 TRUCK CRANE

Here's another heavy-duty, high-reach crane worth looking into . . . a truck-mounted 305, that raises up to 100 feet of main boom (or 130-foot boom-and-jib) *with low A-frame!* It's a 25-ton capacity crane with clamshell, dragline, shovel, hoe versatility.

45-TON
545 TRUCK CRANE

With this big, truck-mounted 545, Koehring now brings you *45 tons* of lift capacity . . . *plus* quick conversion from fully-equipped machine to roadable machine.

K906

Pick the size that suits YOU . . . then call Koehring distributor today for a demonstration.

KOEHRING DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin
Koehring excavators and cranes also manufactured in: CANADA • ENGLAND • SPAIN • JAPAN

For more facts, use Request Card at page 18 and circle No. 481

Euclid service school

A 5-day school at the General Motors Training Center in Golden Valley, Minn., was recently attended by 34 mechanics, operators, supervisors, and owners of equipment produced by the Euclid Division, General Motors Corp., Cleveland. Factory instructors from the division's service department covered such subjects as maintenance, trouble shooting, and the rebuilding of major components.

Owatonna forms division

A new Precision Hydraulics Division has been established by the Owatonna Tool Co., Owatonna, Minn. The division was created to concentrate on the hydraulics part of the regular OTC line of tools and hydraulic maintenance equipment, and to design and manufacture complete hydraulic pumping units.

The new division will be housed in OTC's home plant.

Management

Purchasing:

Preparing subcontracts

by **GEORGE E. DEATHERAGE, P. E.**
construction consultant

On many jobs, it is usual to sublet some parts of the work; on others, nearly all the work may be sublet. And the selection of the proper subcontractors, coupled with the actual preparation of the subcontract documents, involves a considerable amount of detail work.

This detail is taken care of by the Purchasing Department, which secures the subbids, analyzes them, checks up on the reputation and financial responsibility of those bidding, and makes awards recommendations to the general superintendent.

On the cost-plus or fixed-fee contracts, the contract with the owner generally stipulates that all purchases over $1,000 must have the approval of the owner or his representative. On lump-sum contracts, this is not required. In either case, however, all subcontracts should have the approval of the vice president and construction manager before they are legal.

Purchase orders are made out only when materials are supplied without labor. If the work includes labor to be performed, either on the job or in special fabrication such as structural steel, a subcontract must be written.

As all subbids are received on the work, they are headed on one sheet so that they can be easily compared. Should the work require a number of unit prices, this sheet will necessarily be large and a column will be devoted to each unit price.

After the purchasing agent has prepared the analysis sheet, he sends it to the general superintendent, with a memorandum stating his definite recommendation of a subcontractor. In this same letter, he should include a credit report on the subcontractor selected, as well as any other data he has been able to secure on the recommended subcontractor's ability to perform the work.

The general superintendent will then make his decision and, if the job is cost-plus or fixed-fee work, submit it to the owner or his representative for approval. In some cases, if the subcontract is especially large or important, he may send it in to the division superintendent for final approval.

Preparing subcontracts

After the successful subcontractor is selected and approved, the subcontract is prepared by the purchasing agent. A rough draft is first prepared and checked with the subcontractor. Changes and alterations are made at that time so that the final rough draft is satisfactory to both parties. After this it is typed, presented to the superintendent for signature—and the owner if required by contract—and then forwarded for final approval to an officer of the company. The main office receives four copies—the first copy, the owner's copy, a job copy for approval, and an extra copy for the purchasing agent's files. No work is to be performed until the contract is signed.

Specifications are part of the contract documents and are so stated on page 1 of the subcontract. Two sets of the specifications must be signed by both parties to the contract. It is usual to stamp the back of each sheet with "This sheet of specifications is one of the certified specification sheets on subcontract for ( ) and is so identified by signatures of both parties attached hereto." This is signed by the contractor and subcontractor.

One set is given to the subcontractor for his files, and the other is retained in the field office and filed with the contract. Every sheet must be signed, including all of the general conditions of the contract. These are, in most cases, the top sheets on the set of specifications.

Two complete sets of contract

64 Concrete Vibrator Combinations from 12 Basic Components!

3 interchangeable motive power units—electric, air, gas
4 interchangeable heads—1¾", 2⅛", 2½", 3"
1 multiple coupling—to connect any two shafts for longer reach
4 interchangeable flexible drives—4', 6', 12', 21'

Quickly and Easily, in the Field, your men can assemble any one of 64 different concrete vibrator combinations from the 12 basic components shown above!

Because the Viber line is the most versatile line available, Viber flexible-shaft internal vibrators help you reduce your capital investment—reduce your day-to-day operating and maintenance costs—meet *all* your concrete vibrating needs.

Contact your dealer or write direct for detailed information.
Viber Company, 726 South Flower Street, Burbank 29, California.

VIBER CO

VIBRATORS

Pioneers and leaders in the manufacture of vibrators.

For more facts, use Request Card at page 18 and circle No. 441

F/S OPTICAL PLANIMETER
Model 236/A
Eyestrain and parallax in contouring the figure are eliminated by the optical tracer. No need for subtracting the initial reading or adjusting the counting wheel manually.
• Tracing lens providing large magnification
• Zero setting control
• Vernier unit adjustable from .006 to .020 square inches
• Full servicing by factory specialists
F/S offers a complete line of high
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For more facts, use Request Card at page 18 and circle No. 442

drawings are signed on the back in a similar manner. One set is for the subcontractor and one for the field-office contract files. The purchasing agent is responsible for handling all this detail.

Actual drafting of the subcontract requires familiarity with the work to be done; sometimes, it is necessary for either the resident engineer or superintendent to make the rough draft and place it in the hands of the purchasing agent for final negotiation and settlement. This is especially true when the subcontract covers work of a complex or technical nature.

The purchasing agent, since he does not have the training and experience to see whether or not all items were properly stated or incorporated, will have to ask for this assistance. Department heads may also be asked to assist in the negotiations if the purchasing agent thinks it necessary.

Items to watch

Careful investigation should be made so that the purchasing agent can satisfy himself that the subcontractor has the legal authority to contract for the work and that he is not acting as an agent for someone else. Subcontracts should be made with the principal, not with an agent. However, there is no harm in contracting with the agent and principal jointly.

Correct legal names and addresses must be written in the subcontract. Do not abbreviate; use the full names of the contracting parties.

In describing the work, follow as closely as possible the phraseology used in the drawings and specifications to describe the work. Do not itemize the work to be done unless it is expressly desired to separate certain items from other work of a similar character called for by the plans and specifications.

A typical description may be written this way:

"The subcontractor and the contractor agree that the materials to be furnished and the work to be done by the subcontractor are: the furnishing and installing of all interior marble required by the drawings and the specifications, which are hereby identified by number and date as follows: Numbers G4 to G30—dated January 30, 1959—general architectural plans; Numbers S4 to S28—dated December 30, 1958—general steel framing plans; Page 1 to 36—dated December 30, 1958—general conditions of the contract; Pages 89 to 97—dated December 30, 1958—interior marble specifications."

If there should be some additions or deductions, in connection with the work to be performed, they should be written under separate clauses headed "Exceptions to Plans and Specifications." An addition might read this way:

"The subcontractor agrees to furnish and install marble inserts in first-floor stair stringers, as noted on sketch attached hereof, and a part of this contract. Marble to be Tennessee Travernelle, as selected by the architects."

A deduction might be stated this way:

"It is understood and agreed that marble vestibule floors as shown by the plans are to be omitted. These are to have depressed areas, with rubber mats by others."

Such clauses take care of definite additions or deductions, the extent of which is known at the time of signing the contract.

It is a good policy to include in this section of the contract clauses that will permit the contractor to employ force account or unit prices for additions or deductions that may arise after the contract is signed.

This is the forty-third of a series of articles on Construction Management by George E. Deatherage, P. E., consultant to National Schools of Construction Management, P. O. Box 510, Weiser, Idaho, and P. O. Box 8415, Charlotte, N. C. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by the National Schools.

The general conditions of the contract provide for such contingency, stipulating payment by estimate and acceptance in one lump sum; by unit prices named in the contract or subsequently agreed upon; or by cost and percentage or cost and fixed fee.

The price quoted by the subcontractor for the addition or deduction may not be satisfactory, and some other method may have to be found. Estimates and acceptance in lump sum is the best method if both parties are satisfied.

Unit prices are agreed upon for additions to and/or deductions from the work under the contract. These prices include all costs for labor, tools, and equipment; insurance overhead; and profit. They remain in effect until the final completion and acceptance of the contract.

At the option of the contractor, the subcontractor can provide work-

YOU CAN BID LOWER AND MAKE MORE PROFIT
with a DOTMAR Curb, Gutter, Sidewalk Paver!

Dotmar Paver with extensions paves integral gutter, curb and sidewalk.

Dotmar with extensions paves state highway median strip.

Dotmar paves gutter on expressway. A truly versatile machine.

Dotmar paves curb and gutter, over 8' per minute. Total job 14 miles long.

Hundreds of contractors are cutting costs and increasing profits with a Dotmar Paver. Pays for itself in first mile of paving. Greater concrete yield. Easy to operate. Trowels for any shape of curb, gutter, sidewalk or highway strip. Send for Catalog 57

Makers of Dotmar Magnesium Forms, Brush Cutters and Roadside Seed Bedders.

Dotmar INDUSTRIES Inc.

519 HANSELMAN BUILDING KALAMAZOO, MICHIGAN

For more facts, use Request Card at page 18 and circle No. 443

There Is A Difference!

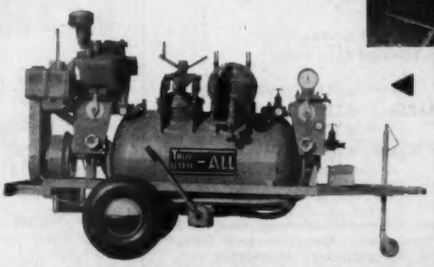
TRUE GUN-ALL SHOOTS REAL CONCRETE

The Model G-4A applies up to 8 cubic yards of quality controlled concrete per hour, using ¾" rock aggregate in the mix (Other models available)

MODEL G-4A

The True Gun-All shoots a quality controlled concrete that is ideal for the construction of hyperbolic paraboloid and thin shell concrete structures, swimming pools, or for the application of concrete in places where it is difficult or impossible to use conventional methods of placement due to the slope or location of the surface to be covered. Only True Gun-All gives you all of the following advantages. . . .

1. Water-cement ratio controlled by water meter
2. Weighed aggregates (by using batching plant)
3. Shoots wet sand without drying
4. Shoots up to ¾" rock aggregate
5. Built-in mixing paddles



The Model F-2 applies up to 5 cubic yards of quality controlled concrete per hour, using ⅜" gravel aggregate. (Other models available.)

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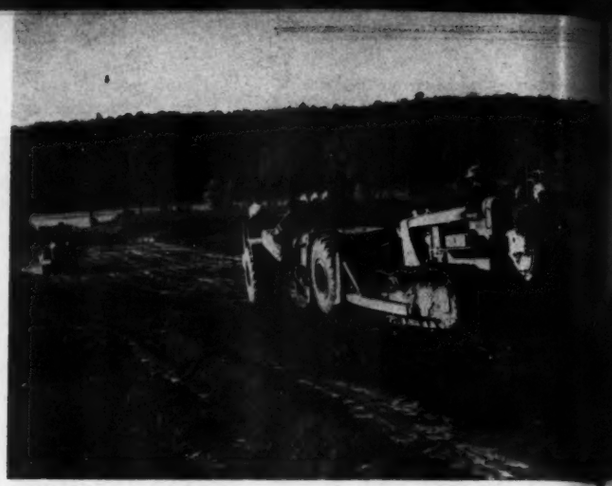
P.O. Box 2526 Tulsa, Okla.

For more facts, use Request Card at page 18 and circle No. 444

Subgrade compaction of a floor slab for the Imperial Tobacco plant in Guelph, Ont., Canada, is accomplished with an Essick Model VR-28W roller vibrator, before a 146-inch-wide roll of welded-wire fabric is pulled in to serve as reinforcing for the concrete.



A pocket-size earthmoving job requires just two rigs. The job, near Louisville, Ky., is an access road for a local quarry that wants to ship stone by barge. The two Michigan Model 110 tractor scrapers move as much as 2,100 cubic yards on an 8 to 10-hour day.

FOR REAL EFFICIENCY AND ECONOMY INSTALL A HYDRO BURNER ON YOUR ASPHALT PLANT.

ASPHALT MEN— CUT FUEL COSTS UP TO 50% and SAVE UP TO $100.00 A DAY!

A HYDRO BURNER ON YOUR ASPHALT PLANT

HYDRO BURNER
Model #30-0-2

Can Give You:

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2.—Increase in Production!
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5.—Clean Boiler Surfaces!
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7.—Simpler operation!
8.—Longer Firebrick Life!

All of which means $ $ $ to YOU!

Write today for More Information or call collect

Hydro Burners

UTAH HYDRO CORP.
751 West 8th South, Salt Lake City 4, Utah
Phone: EM 4-7353
DEALER INQUIRIES INVITED

For more facts, use Request Card at page 18 and circle No. 445

ROCKLAND— THE MOST VERSATILE LAND-CLEARING ATTACHMENTS IN THE WORLD.

Easily converts from Tree-Brush-Root Cutter to Standard Rake Front

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- BRUSH RAKES
- TREE KNOCK-DOWN BOOMS
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- BACK-RIPPER TEETH
- STUMPMASTER BLOCKS
- STUMP PULLERS
- TOOL BARS
- UNDERCUTTERS
- ROOT CUTTER TEETH
- HI-BALLS AND CHAIN

Rockland Products may be purchased from most Allis Chalmers, Eimco, International Harvester and Oliver Crawler Tractor Dealers. For additional information, contact direct.

ROCKLAND ALLIED EQUIPMENT CO.
3778 West Colonial Drive • Orlando, Florida

For more facts, use Request Card at page 18 and circle No. 446

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FACTORY SERVICE BRANCH
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THE BLACK & DECKER MFG. CO., *Dept. S3606, Towson 4, Md.*

Black & Decker
QUALITY ELECTRIC TOOLS

For more facts, use Request Card at page 18 and circle No. 447

(Continued from preceding page)

men at specified hourly rates, including insurance, tools and equipment, overhead, and profit.

Job completion

Under the completion schedule in the contract are the completion dates for several portions of the work in accordance with the time schedule. Other clauses may be used, including this one:

"The subcontractor, by contact with the work at the site, will keep himself advised as to the progress of other trades, and prepare to cooperate with and keep his work in step with others, with the understanding that if he delay the work he shall, at his own expense, provide a remedy for such condition on the order of the contractor's superintendent."

Other methods of stating progress or completion may be used, depending on the circumstances of the case.

Sometimes it is necessary to incorporate a damage clause to insure speedy completion of work. The following is a good example:

"Inasmuch as it is understood that the contractor will suffer damages amounting to at least ( ) dollars per day for each working day that the work herein contemplated remains uncompleted beyond the date mentioned, it is agreed that the contractor will deduct from any amount due the subcontractor the sum of ( ) dollars for each working day's delay in completion, such amount to be considered as actual liquidated damage suffered by the contractor, and in no event to be considered as a penalty, and, in the event the amount due the subcontractor shall not be sufficient to pay such liquidated damages, remaining due to the contractor. In case the work is completed before the date specified, the contractor shall pay to the subcontractor as a bonus, and in addition to other sums, the sum of ( ) dollars per day for each day between the date of completion of the work and the date agreed upon for the completion, or as the same may be extended.

"A working day is hereby defined as a day, not a Sunday, Saturday afternoon, or a legal holiday, on

Resort hotels of San Juan, Puerto Rico, form the backdrop for the 14-inch dredge Judith, built by Ellicott Machine Corp., which is pumping hydraulic fill into place for a 4-lane highway on the south shore of Condado Lagoon. The roadbed of the new highway is being built by San Juan Dredging Corp.

A saving of 118 tons of steel was achieved for the tube mill building for Scovill Mfg. Co., Waterbury, Conn. The 3-bay unit, 1,150 feet long, has a center truss that cantilevers 16 feet into side aisles. This reduces stress in the center truss and requires side trusses with spans of 46 instead of 62 feet.

which the usual force can work effectively. When either the force or the working time is reduced on account of weather conditions or causes beyond the control of the subcontractor, the contractor shall determine the fair amount of useful working time to be charged against the job.

"It is expressly understood and agreed by and between the parties hereto that the above provision for a reduction of the price for each day's delay in the completion of the work is solely on account of, and in liquidation of, those elements of damage which are incapable of accurate measurement, and which it is agreed the contractor will suffer through the disarrangement of its organization and plans for the economical prosecution of building operations, caused by any delay on the part of the subcontractor. But the deduction specified is not intended to cover any loss or damage to which the owner may be put through delay on the part of the subcontractor, for which the contractor may be held liable, nor any loss or damage to the contractor on account of any delay in the completion by it of the whole building or structure. It is agreed that in case any delay in the performance of this contract by the subcontractor, due allowance being made for the contingencies expressly provided for herein, shall cause damage to owner for which the contractor is liable, or in case such delay shall cause delay in the completion by the contractor of the entire building or structure, the subcontractor shall be liable to the contractor therefor."

The general conditions of the contract usually cover all terms not specifically mentioned in the printed subcontract; yet there are, in most subcontracts written, certain special conditions peculiar to each of them. These special conditions should cover every item and contingency not covered in the general conditions or the written contract. They should be typed on plain paper, attached to the contract, and signed as part of the contract.

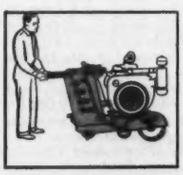
If a special guarantee is required, for instance, it must be covered in the guarantee clause. A bond, if

(*Continued on next page*)

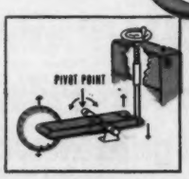
THE FASTEST CUTTING CONCRETE SAW BUILT!

The rugged Clipper 36 H.P. Model C-363, best ever built for production performance on highways, airfields — heavy trenching jobs. One of many Clipper saws for every job — every budget!

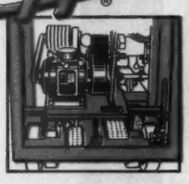
AND HERE'S HOW Clipper® BUILDS THEM...



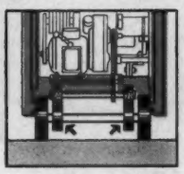
Our engineering staff really outdid themselves with Dual Balance Design—which simply means that this Big Saw is so perfectly balanced that one man can easily handle it. The engine weight is over the blade, preventing blade "ride-out". It's easier to use than any other saw—another reason why 4 out of 5 Buy Clipper!



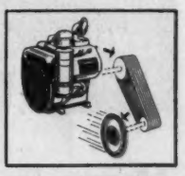
Only the most accurate blade feed was good enough for us, so we originated Ball Bearing Positive Screw Feed... which gives you positive control of the blade at all times ... and enables you to keep abrasive blades at the proper cutting depth as they diminish in diameter. No other method... not even hydraulic ... gives such complete blade protection.



We bring you the most powerful Heavy Duty Transmission ever used on a concrete saw. To it we've added abrasive coated drive wheels (ours only) which transmit smooth continuous power and propels this rugged saw through the toughest jobs at speeds up to 26 feet per minute. Another reason why it's the fastest saw ever built!



Solved! The problem of curing compound buildup on the drive wheels. We added two Separate Contact Wheels which never touch the pavement and operate right off the transmission drive wheels. Result? Continuous operation without downtime for wheel clean-up. A good example of our experienced know-how, which means more practical, efficient equipment for you.



Selection of component parts gets the same intelligent thought given the design of Clipper Saws. That's why we chose the dependable proven 36 H.P. Wisconsin Engine, then added 6 reinforced V-Belts to give 100% sure power delivery. That's why we can guarantee that no other saw can match Clipper!

ONLY CLIPPER CONCRETE SAWS ARE... Unconditionally Guaranteed TO CUT FASTER— HANDLE EASIER and GIVE MORE FOOTAGE PER BLADE THAN ANY OTHER SAW!

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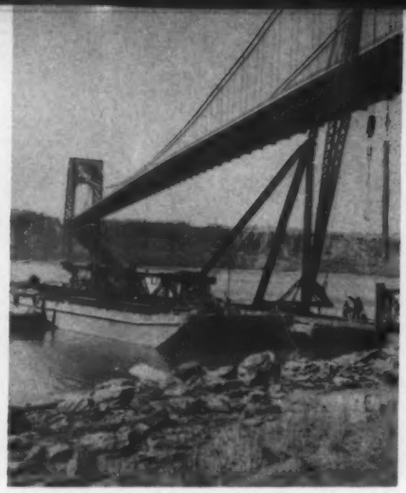
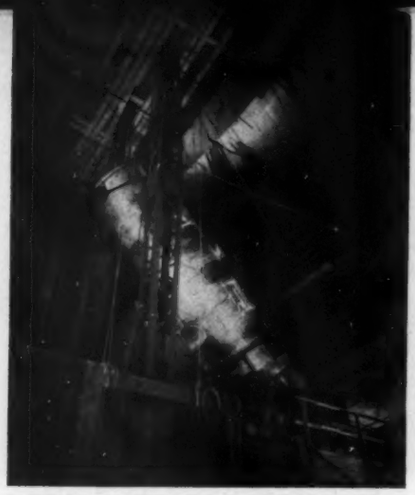
THE CLIPPER MANUFACTURING CO. — 2803 East Warwick — Kansas City 8, Missouri

Sold direct from Clipper offices and warehouses coast to coast. • Call your Factory Trained Representative for Free Demonstration.

For more facts, use Request Card at page 18 and circle No. 448



Pile driving for a dock in the shadow of New York's George Washington Bridge is done by Bethlehem Steel Co. screws. The dock will be used by car floats delivering steel for the 6-lane lower deck.



An 11-hour job: positioning this 68-ton nuclear-reactor pressure vessel in a vapor container for the Westinghouse reactor at Waltz Mills, Pa. Rust Engineering Co., Pittsburgh, did the job.

In heavy New York City traffic, a Manitowoc Model 3900 places concrete for a 19-story apartment house. The crane also handled forms, equipment, and steel.

REDUCE SHORING COSTS 50%

WACO HI-LOAD SHORING

HI-LOAD is specifically engineered for Heavy-Duty shoring. Load capacity of 10,000 lbs. per leg is *TWICE* the capacity of conventional steel scaffolding. In addition to saving on initial equipment, *HI-LOAD* with *Speedlock*, reduces erection and stripping time, forming, handling costs and storage. Complete line of accessories available . . .

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A Complete Line of Shoring Equipment to any required height

POST SHORES Wide Range, 6′ to 15′6″. Patented Speedset adjustment. Head styles to meet all requirements.

SECTIONAL SCAFFOLDING Patented *Speedlock*, built-in ladders, pivoted cross braces, wide variety of frames and complete accessory line.

WACO *Manufacturing Company*

5251 West 130th Street Cleveland 30, Ohio

Licensees: Armson Iron Works, Windsor, Ontario
Tubular Structures Corp. of America, Los Angeles, California

For more facts, use Request Card at page 18 and circle No. 449

(Continued from preceding page)

needed, can be covered this way:

"Before work, this subcontractor shall furnish to the contractor satisfactory surety company's performance bond in amount equal to (per cent) of the contract price, stated in Section 4, in the premium therefor to be an addition to the contract price."

Starting time can be covered by:

"The contractor will give the subcontractor ( ) days notice when to start his work on the site."

If municipal inspection is required, this statement will cover it:

"If municipal inspection is required, subcontractor shall arrange for and stand the expense of such inspection."

It is wise to end the special notes with:

"Wherein the provisions of this agreement vary from the provisions of the plans and specifications, the

New SYNTRON

SELF-CONTAINED ELECTRIC HAMMER DRILLS

No More Controller

Self-Rotating -- take all the work out of drilling in concrete

The new SYNTRON Electric Hammer Drills are now available as single, self-contained units—plug directly into power outlet—only one connection to make—no control box to drag along.

SYNTRON'S exclusive, automatic, self-rotation of drill bits takes all the work out of drilling holes in concrete—no more tiresome quarter-turning of bits by hand.

SYNTRON Electric Hammer Drills are noted for their dependability, and long trouble-free life — SYNTRON'S fewer working parts means lower maintenance.

For complete information on SYNTRON'S new self-contained Electric Hammers and Hammer Drills . . .

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SYNTRON COMPANY
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Other SYNTRON Equipment of proven dependable Quality

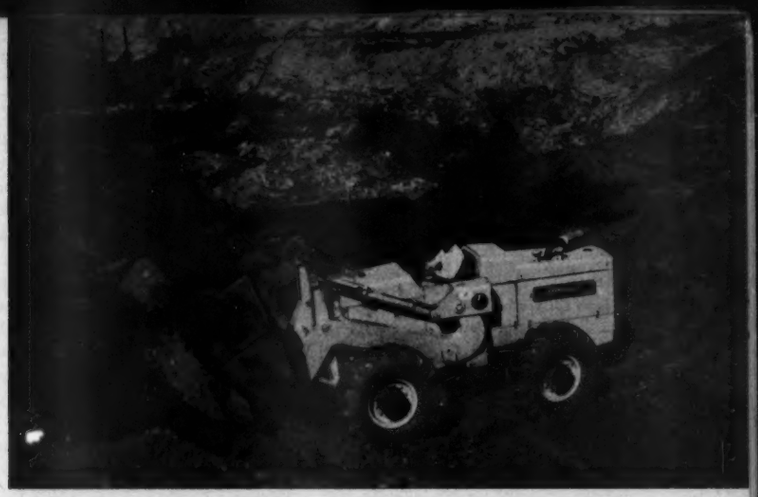
GASOLINE HAMMER ROCK DRILLS

ELECTRIC SAWS

VIBRATING CONCRETE FLOATS

For more facts, use Request Card at page 18 and circle No. 450

Topsoil is spread around a completed home by an International Model 55 Payscraper in Dumbarton Heights, a 142-acre tract for a 200-home development near Baltimore, Md. Owned by Macon Construction Co. of Baltimore, the Payscraper works an average haul distance of 2,000 feet.



A variety of jobs is handled by this Model HO Payloader working for Buckley & Co., Inc., Philadelphia, on an extension of Roosevelt Boulevard in that city. The tractor shovel takes care of loading operations, cleans up, and assists trucks out of cuts for this depressed limited-access highway.

provisions of agreement will take precedence over the plans and specifications."

When there is a contract

A contract exists when an offer is made without qualification. If there are qualifications, there is no contract. If a contractor wishes to accept an offer at once, before there is time to prepare a contract in the regular manner, he should write the acceptance to bind the bargain stating that this is "pending the acceptance of a proper contract."

A lot of experience is needed to write a proper subcontract, and no matter how it is written, there can always be an argument about whether or not it is proper. In the first place, it is a legal document and, since it is prepared by a layman, there will naturally be some inaccuracies. The best protection for any contractor lies in the selection of a responsible subcontractor—preferably one who has done satisfactory jobs in the past.

(Next month's article will deal with "Purchasing: special items in subcontracts.")

YOUR FUTURE IS WHAT YOU MAKE IT!

You can count on reaching the top if you are sharp in Construction Management! For the first time, Construction Management is offered as a specialized, complete training course at an approved school. If you cannot attend the classes at the school, the course is available as a home study program.

For complete information, no obligation, write Dept. CE-3 at either address:

NATIONAL SCHOOLS OF CONSTRUCTION

Box 8415, Charlotte, N. C.
Box 510, Weiser, Idaho
For more facts, circle No. 451

. . . *reserve* *mixing capacity* that KEEPS your trucks rolling!

Large screening capacity, 85 ton hot aggregate storage, plus a specification 4 ton mixer (not simply an overrated 3 ton) keep your trucks moving! This extra capacity of the new Simplicity S-200 is there at start up time or whenever trucks stack up.

The new S-200 is fully automatic. Push one button and all weighing, mixing and dumping is done automatically. One movement replaces a minimum of eleven movements by mixer man. **Easier — Faster — More Accurate.** Like all Simplicity plants the Model S-200 has the dependable, durable, economical, Simplicity double shell dryer.

On request, we will be glad to give you the facts.

DEPENDABLE

THE SIMPLICITY SYSTEM CO.
RIVERSIDE DRIVE • PHONE MADISON 2-2144
CHATTANOOGA 4, TENNESSEE

For more facts, use Request Card at page 18 and circle No. 452

Five-point check list for electric starting system

In analyzing generator-regulator operation, a five-point check can be made to find out whether units in the system are operating properly. If not, the checks will indicate whether the generator or regulator is at fault.

1. A fully charged battery and low charging rate indicates normal generator and regulator operation.

2. A low battery and high charging rate indicates normal generator and regulator operation.

3. A fully charged battery and a high charging rate indicates that the voltage regulator is not reducing the generator output as it should and will damage the battery. This condition may be caused by improper voltage regulator setting, defective regulator unit, short circuit or poor connection in generator or regulator wiring, or it may be caused by high battery temperature.

4. A low battery and low or no charging rate indicates improper or no regulator operation. This may be due to loose connections, damaged wires, low voltage or current regulator setting, oxidized contact points, or a defective generator.

5. Excessive arcing at contact points may be due to several causes, including oxidized or misaligned contact points, defective regulator winding, or poor cable connections.

The use of Herman Nelson portable heaters permitted work to continue on this Lansing, Mich., hospital annex during temperatures of 5 to 15 degrees F.

Case history

Heaters keep work going despite freezing weather

In spite of bitter cold during the wintertime construction of a 5-story annex for the Edward J. Sparrow Hospital, Lansing, Mich., work went ahead at full pace, states the Reniger Construction Co., of East Lansing. Continuous heat was supplied by strategically placed Herman Nelson utility portable heaters. Often lifted about by crane to the upper floors where heat was needed, many units were kept in use 24 hours a day straight through the week.

Especially stressed by Reniger was the fact that the heaters made it possible to place concrete in zero weather.

The Herman Nelson utility heater is designed to use interchangeable power plants—motor drive where there is electric current, or gasoline engine for remote job sites.

For further information on Herman Nelson heaters write to the American Air Filter Co., Dept. C&E, 215 Central Ave., Louisville 8, Ky., or use the Request Card at page 18. Circle No. 173.

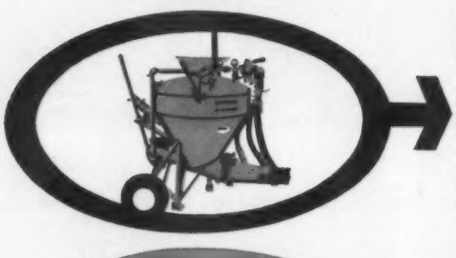
YOU GET SO MUCH MORE FROM

AIRPLACO

THE ONLY COMPLETE LINE OF
PNEUMATIC CONCRETE PLACING EQUIPMENT

More versatility . . . more efficiency . . . more economy . . . more jobs done better, faster and easier. That's what you can expect from Airplaco equipment. From the simplest concrete repair or restoration job to the largest construction project, Airplaco equipment means more profit to you.

AIRPLACO BONDACTORS AND NUCRETORS. With five models to choose from, you can gun concrete at any rate from ½ to 8 cu. yd. per hour. Airplaco guns are adjustable to a variety of materials including concrete, refractories and insulating concretes. There is an Airplaco gun just right for your needs.



AIRPLACO CONCRETE PLACERS. The new, low-cost way to place and distribute structural concrete. Two models give you production range up to 30 cubic yds. of material per hour. Concrete is conveyed through lightweight placement tubing to any point on the job. Serves equally well in grouting operations. Save many man hours with this flexible new method.

AIRPLACO MIX-ELVATORS. Automatic proportioning, mixing and elevating equipment. Three models deliver up to 12 cu. yds. of mix per hour. One model has built-in aggregate dryer that reduces moisture content of sand. Teamed up with an Airplaco gun, the Mix-Elvator gives you a most efficient and mobile gunning rig.

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Our experience in solving unique problems involving the handling of concrete has saved thousands of dollars for others. This experience is available to you. Write, wire or phone us, anytime.

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THE AIRPLACO LINE ALSO INCLUDES: CONCRETE GROUTERS—JET-BLASTER (wet or dry) SANDBLASTERS — Complete Line of Hose, Nozzles and Accessories

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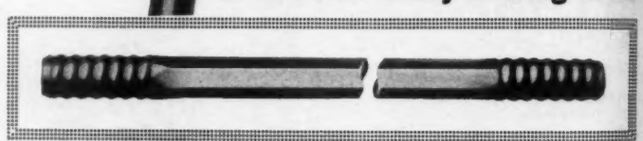
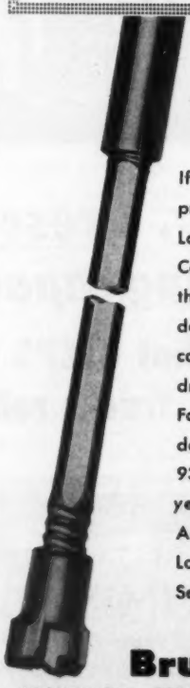
For more facts, use Request Card at page 18 and circle No. 453

New ROPE THREAD
on Brunner & Lay Drilling Tools





. . . . makes long-hole drilling
EASIER • MORE PROFITABLE

If it's deeper holes you are after, you can't buy more productive tools than the rope thread Brunner & Lay assembly . . . carbide Rok-Bits, Couplings, Carbo-Rok Sectional Rods, Striking Bars. Solid rope thread connections ensure greater rod rigidity for deeper drilling. Rod life is extended — breakage costs reduced. Easy hand uncoupling. An unbeatable drilling unit designed and built to work together. For complete information call your Brunner & Lay dealer, or our nearest plant. Brunner & Lay, Inc., 9300 King St., Franklin Park, Ill. *77 progressive years.* Plants & conversion shops: Albuquerque, Asheville, Birmingham, Denver, Dorchester (Boston), Los Angeles, Philadelphia, Portland, Sacramento, Seattle, Lachine, P. Q.

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AIR TOOL ACCESSORIES—MOIL POINTS, CLAY SPADES, ASPHALT CUTTERS, etc.

For more facts, use Request Card at page 18 and circle No. 454

This base-paver attachment averaged nearly 600 tph in placing pugmill mix on a $2½ million road project near Oklahoma City, Okla. The Blaw-Knox unit handled as much as 700 tph in reducing operating costs 60 per cent for the Amis Construction Co.

Case history

Base-paver attachment pares costs 60 per cent

Averaging nearly 600 tph, the Blaw-Knox Model P-160 base-paver attachment helped the Amis Construction Co., of Oklahoma City, Okla., reduce operating costs by 60 per cent in placing pugmill mix. The job was a $2½ million road project that involved grading and paving Interstate 35 Bypass near Oklahoma City.

In addition, the contractor claimed, the base-paver attachment's oscillating screed provided 15 to 20 per cent more compaction than other units tested.

The job specified use of plant-mix. Waterbound macadam base was prepared at the construction firm's rail-located plant site and hauled in thirty 8-ton dump trucks 2½ miles to the working area. About 1 mile of the project was prepared for base-course application at one time.

Each side of the divided highway varied in width from 36 to 80 feet for turnoff sections. Ramps are 18 feet wide. The 8-inch-thick base course is placed in two 6-inch-thick lifts, each compacted to 4 inches on a 12-inch-thick granular subbase, and topped with 5-inch-thick double course asphaltic concrete.

"In the past," states the firm, "we used dozer blades on crawler tractors for this kind of a job. A project of this type would have required 4 motor patrols, 3 water wagons, 2 truck spotters, a stake man to chase stakes, and a foreman."

Using the P-160 with an International TD-18 tractor, Amis required only 1 water truck, 1 truck spotter, and a foreman.

For further information write to the Blaw-Knox Co., Dept. C&E, 300 Sixth Ave., Pittsburgh, Pa., or use the card at page 18. Circle No. 158.

Foamed-asphalt process covered in ARBA bulletin

The use of foamed asphalt in soil stabilization and for slurry seal coats is discussed in Technical Bulletin No. 240, "Foamed Asphalt," issued by the American Road Builders' Association. The well illustrated bulletin describes the development and testing of the process at Iowa State College.

Copies of the bulletin may be obtained for 50 cents each from the ARBA, World Center Bldg., Washington 6, D. C. Each ARBA member is entitled to one free copy.

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GROUTING AND CONCRETE PLACING EQUIPMENT

- Soil Stabilization
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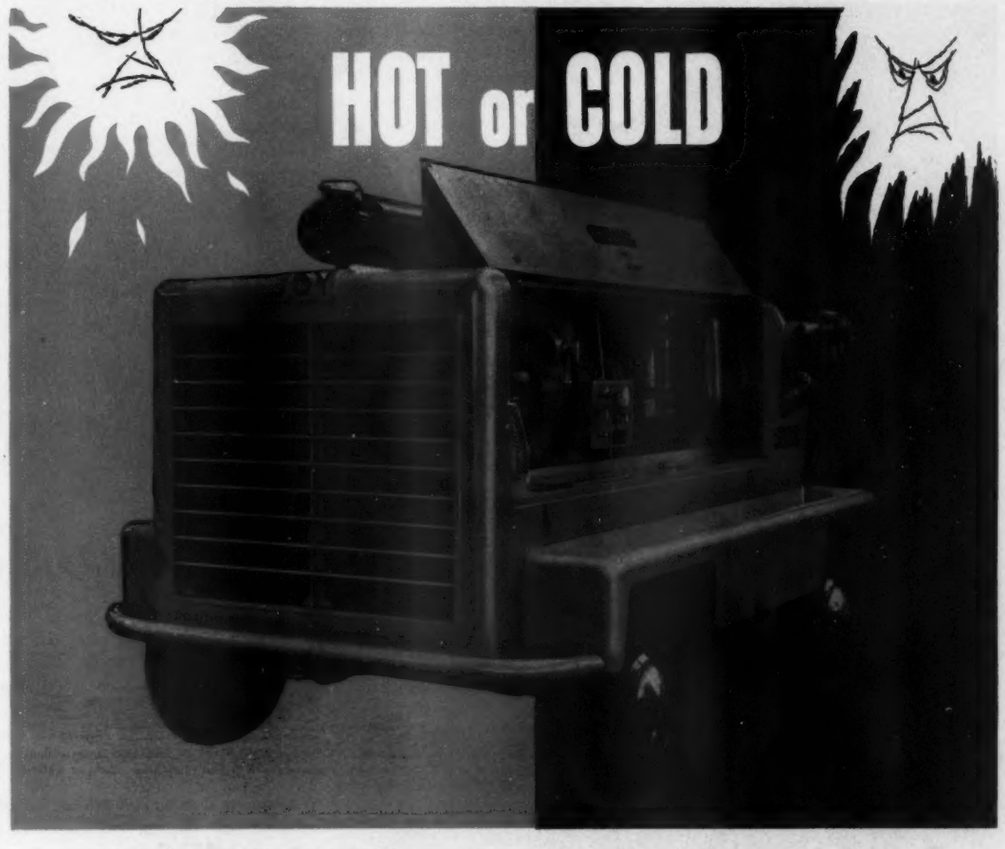
In the size to meet your most intricate needs.

Write for descriptive literature or see your local distributor.

PREHY COMPANY 420 Lexington Ave., New York 17, N. Y.

For more facts, use Request Card at page 18 and circle No. 455



summer in Arizona or winter in Maine—
it's all the same to the new Joy RP-600

A 600 foot portable that can operate in desert heat . . . that's the Joy 600. A big cooler-radiator and a large slow-speed fan give the Joy 600 the largest cooling capacity available on any rotary. The RP-600 will operate continuously under full load in the hottest weather.

For cold weather operation, a series of by-pass valves in the cooling system assures adequate lubrication . . . even in sub-zero weather that would keep other portable compressors shut down.

Other features that make the Joy RP-600 the most reliable machine on the market: Replaceable element oil filter . . . Automatic blowdown valve . . . Fail-safe safety circuit.

If you want compressor reliability in all kinds of weather, see your nearest Joy distributor and have him tell you about the complete line of Joy rotaries . . . sizes from 125 to 900 cfm.

Write for Bulletin 286-21

JOY CONSTRUCTION EQUIPMENT IS SOLD AND SERVICED BY THE JOY DISTRIBUTOR IN YOUR AREA

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Portable Compressors | Trac Drills | Tungsten Carbide Rock Bits | Hand-Held Rock Drills

Joy Manufacturing Company
Oliver Building, Pittsburgh 22, Pa.

In Canada: Joy Manufacturing Company (Canada) Limited, Galt, Ontario

WSW C-7465-359

For more facts, use Request Card at page 18 and circle No. 456

BUILT TO SPREAD THE BIG ONES!

SPREADS FROM 36:00 x 54" 40 PLY, DOWN TO 14:00 CROSS SECTIONS

BRANICK "TS" MODEL SPREADER

TWO SEPARATE UNITS that can be wheeled up to the tire and spread right where it stands. Simply engage bead hooks and use any air service hose to quickly spread casing up to 3 ft. from bead to bead for INSPECTION—SKIVING—BUFFING—INSERTING TUBES and FLAPS and PACKING AIR BAGS.

The TS is shown with only an 18:00 x 24" casing so spreaders might be pictured in proper size without too large an illustration.

WRITE TODAY FOR COMPLETE DETAILS.

BRANICK MFG. CO., INC.
FARGO BOX 1937 NORTH DAKOTA

For more facts, use Request Card at page 18 and circle No. 457

Due largely to the savings in time afforded by the electric-conveyor system, the initial cost for change-over was regained in little more than a month's tile-laying operation.

Case history

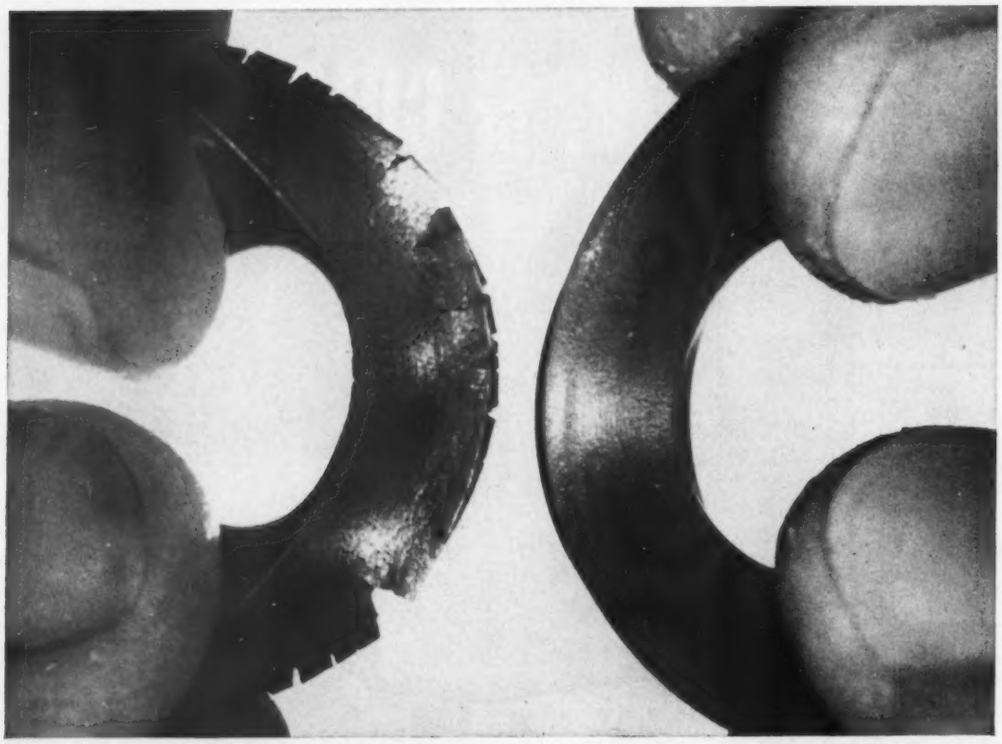
Conveyor change-over pares tile-laying time

After the Willaert Construction Co., of Mankato, Minn., had installed on its tiling machine a new conveyor system powered by electric motors, the time element in laying several miles of 20-inch tile reportedly was cut approximately in half, and maintenance was greatly reduced.

The change-over from a chain-drive system cost about $2,000, and included a Kato brushless ac generator belt-driven from the engine.

The Kato alternator is driven from the front end of the engine crankshaft through a V-belt pulley arrangement. The ac generator furnishes power for two electric-drive motors, with gear reduction boxes, which are located at each end of the dirt conveyor, and also for a 3-phase ac motor which drives a ¼-ton electric chain-hoist drive used for lowering tile or raising stone from the ditch. There is a reversing switch on the generator controls which permits a simple reversing of the entire system by merely reversing the phase rotation of the generator.

For further information write to the Kato Engineering Co., Dept. C&E, 1415 First Ave., Mankato, Minn., or use the Request Card at page 18. Circle No. 119.



Two torque converter seals, subjected to 300 hours of service at 325° F., show added protection of D-A Torque Fluid. Seal on left, used with ordinary torque fluid, is brittle and cracked, has shrunk excessively. Seal on right, used with D-A Torque Fluid, remains resilient and reveals no cracks or deterioration. It was protected by D-A's exclusive preservative.

Prevent seal trouble, increase converter efficiency with D-A TORQUE FLUID

Better performance, less maintenance and longer equipment life . . . these are among the benefits you get when you specify D-A Torque Fluid for (1) heavy-duty automatic transmissions, (2) hydraulic systems and (3) rotary compressors.

Note these advantages: D-A Torque Fluid possesses superior oxidation stability, provides increased efficiency through carefully controlled viscosities and allows operation in even the coldest weather because of minus 35° F. pour point.

But that isn't all! D-A Torque Fluid is ideal for all types of rotary compressors because special high-temperature oxidation inhibitors prevent formation of sludge and varnish, extend compressor life and permit longer operation periods between lubrication changes.

And D-A Torque Fluid gives a big bonus in the protection of rubber seals . . . extends the life of seals, prevents leakage. This added protection is accomplished by a special seal preservative found only in D-A Torque Fluid. Seals last indefinitely . . . shrinkage and cracking are eliminated . . . swelling is controlled to an ideal maximum of 0.2%.

Lubricating heavy-duty equipment across the nation since 1919.

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, IND.

For more facts, use Request Card at page 18 and circle No. 458

Case history

Heavy-duty wire cable reduces scraper downtime

The use of Yellow Strand Powersteel wire cable on its scrapers resulted in longer rope life, less downtime, and lower operating costs, reports the C. H. Burns & Son Construction Co., Dallas, Texas.

Prior to Powersteel, the company tried six different brands of rope, and all proved unsatisfactory—on one job more than $600 was spent on rope in less than two months. In February, 1958, Powersteel was put into use; not a cable has been reported broken.

For further information on Yellow Strand Powersteel wire rope, write to the Broderick & Bascom Rope Co., Dept. C&E, 4203 Union Blvd., St. Louis, Mo., or use the Request Card at page 18. Circle No. 140.

PRODUCT PARADE

For further information on any of the products described in the following section, circle the designated number on the Request Card at page 18.

New blast-hole drill announced

A medium-size heavy-duty rotary blast-hole drill, for drilling holes 6¼ to 7⅞ inches in diameter, is offered by the Bucyrus-Erie Co.

Designated Model 30-R, the unit is available either crawler-mounted, truck-mounted, or truck-mounted with power takeoff from the truck engine. Down-the-hole tools are available for all three units.

The crawler-mounted version is designed to drill to a depth of 106 feet. Power units available are a Cat D318GT turbocharged 4-cycle diesel or GMC Model 6-71 2-cycle diesel. Speed of the rotary drive can be varied from 0 to 100 rpm.

The truck-mounted model is designed for an International Harvester RF-190 or GMC X-W365 truck with V-8 gasoline engine. Height of the derrick above ground is 36 feet 2 inches. Length of the truck with derrick down is 33 feet 9 inches. Maximum width is 8 feet, and maximum height is 13 feet.

For further information write to the Drill Division, Bucyrus-Erie Co., Dept. C&E, Richmond, Ind., or use the Request Card at page 18. Circle No. 47.

Loader powered by 300-hp engine

The Frank G. Hough Co. announces the addition of the new Model H-120 to its line of rubber-tire 4-wheel-drive Payloader tractor shovels.

On the H-120, the maximum height of the raised bucket is 19 feet 2½ inches; clearance to center of the hinge pin is 14 feet 7½ inches. With the bucket dumped at 50 degrees, clearance under the bucket edge is 10 feet 10 inches, and the forward reach from the front tire is 3 feet 6 inches.

A Cummins Model NRT-6-BI turbocharged 300-hp engine is standard, and the machine's carry capacity is rated at 12,000 pounds. The H-120 travels at speeds up to 28 mph.

For further information write to The Frank G. Hough Co., Dept. C&E, 710 Seventh St., Libertyville, Ill., or use the Request Card at page 18. Circle No. 46.

Shovel-crane rated at 18 tons

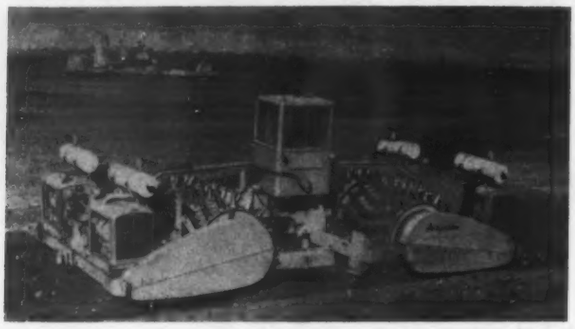
The Lorain Model MC-218 18-ton Moto-Crane is available from The Thew Shovel Co.

This 6×4 rubber-tire unit utilizes a 180-foot-long carrier and offers travel speeds up to 43 mph.

Other features include: hydraulic steering as standard; forged axle housings; double-reduction helical-hypoid gears; front bumper and outrigger boxes integral with frame; side-by-side telescopic outrigger beams; straight-line propeller shafts; and through-drive for automatic application of engine torque to the wheels having traction.

According to the manufacturer, the MC-218 is fully convertible to shovel, crane, clamshell, dragline, and hoe.

For further information write to The Thew Shovel Co., Dept. C&E, 28th and Fulton Road, Lorain, Ohio, or use the Request Card at page 18. Circle No. 45.



Shovel Supply's big tamping roller is shown in use on the 29-million-yard earth fill for the Navajo Dam near Farmington, N. M.

Announce tamping roller with weight to 60 tons

A self-propelled tamping roller, featuring 120,000-pound ballasted weight, is available from the Shovel Supply Co.

The unit consists of 4 drums measuring 5 feet in diameter and 6 feet long, and equipped with feet with removable hard-surfaced tips. Each drum is individually driven by a GM 100-hp diesel engine through an Allison torque converter and 3-speed power-shift transmission. All controls are handled from a central cab by one operator.

According to the manufacturer, each drum is free to oscillate in every direction, allowing the unit to follow closely undulations of the fill. Shifting gears on all units is simultaneous and practically automatic, and operating speeds are from 2 to 6 miles per hour.

Steering is accomplished by two large double-acting hydraulic cylinders between the front and rear units. The machine, empty, weighs 96,000 pounds.

For further information write to the Shovel Supply Co., Dept. C&E, P. O. Box 1369, Dallas, Texas, or use the Request Card at page 18. Circle No. 38.

All-wood corner offered for concrete forming

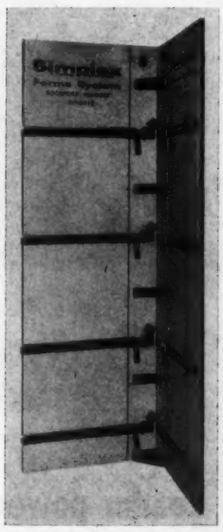
An all-wood corner for concrete forming, designed to eliminate loose hardware and cut on-the-job assembly time, is announced by Simplex Forms System, Inc.

The new unit is made of 1⅛-inch plastic-impregnated plywood and is fitted with ¼-inch × 2-inch steel braces for maximum strength.

Retractable levers and hooks at each end enable the corner to serve as both a regular inside or opposite corner and permit use with either inside or outside panels.

Standard sizes are furnished in 8×8-inch widths and are available in 4, 6, 8, and 10-foot heights. Other sizes including 6×6 and 4×4-inch widths are also available.

For further information write to Simplex Forms System, Inc., Dept. C&E, 5605 Industrial Ave., Rockford (Loves Park), Ill., or use the Request Card at page 18. Circle No. 175.



For more facts on these products, circle the indicated number on the Request Card at page 18.

BRADEN WINCH responds to remote, push-button pole-setting unit

Tel-E-Lect Products, Inc. is producing a new hydraulically equipped truck with remote control pole-setting unit. Operator, standing outside of truck, controls all equipment from one simple remote control head.

The trucks are equipped with BRADEN M6-15AES Winches, and perform perfectly as an integral part of the control unit.

This is another example of the ingenious ways BRADEN Truck Winches can be used to speed and lighten complicated handling jobs.

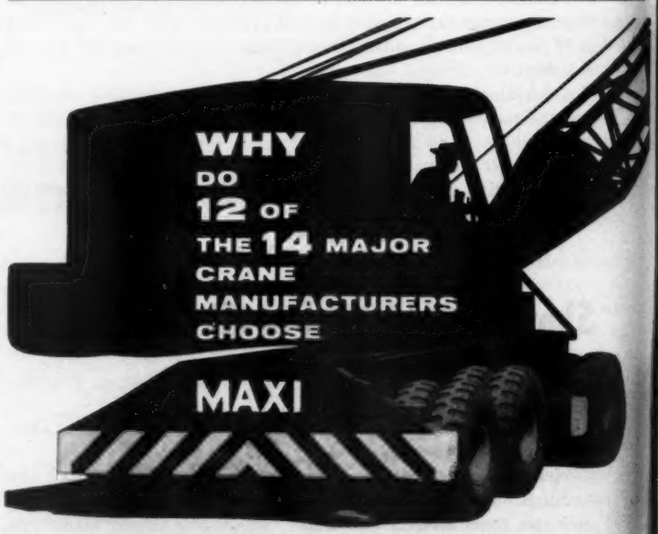
Close up of the TEL-E-LECT Remote Control Head.

write for complete winch catalog.

BRADEN WINCH COMPANY
P.O. Box 547, Broken Arrow, Oklahoma

"In Service Around the World"

For more facts, use Request Card at page 18 and circle No. 459



EXCLUSIVELY FOR ALL, or for their larger capacity self propelled rubber tired cranes?

Because, for rugged design and superior performance, the **MAXI** *has no equal.* For facts showing you how a one-man operated **MAXI** mounted self-propelled crane can cut your operating and labor expenses, contact your local crane dealer or write to:

THE MAXI CORPORATION

912 SOUTH TURNBULL CAÑON ROAD, CITY OF INDUSTRY, CALIFORNIA

For more facts, use Request Card at page 18 and circle No. 460

The transmission on the Model 15-B is full-torque shifting, constant mesh, with instant shift from forward to reverse.

improved power buggy features all-new drive

The Prime-Mover Co. announces the Model 15-B power buggy with improved controls, featuring an all-new drive designed specifically for construction use. The combination transmission, differential, and drive axle assembly is completely enclosed in one housing and is lubricated from one reservoir of oil. The transmission is full-torque shifting, constant mesh, with instant shift from forward to reverse.

The machine has a ¾-ton capacity. The 10-cubic-foot dump bucket latches onto the chassis and is quickly interchangeable with a flatbed platform.

Powered with a Wisconsin 7-hp air-cooled engine, the 15-B easily takes 20 per cent inclines fully loaded, according to the manufacturer. Only 31½ inches wide, it goes through standard doorways and spots loads quickly in confined areas.

For further information write to The Prime-Mover Co., Dept. C&E, Highway 22E, Muscatine, Iowa, or use the Request Card at page 18. Circle No. 40.

Quickly repositioned preparatory to the haul, the Rogers low-bed detachable gooseneck trailer is reconnected by means of a winch located on the rear of the Mack hauling unit. The heavy crawler crane, owned by the Gerosa Crane Service Co., of New York, has been loaded easily and in a matter of minutes. Gerosa also owns the Rogers trailer. For further information write to the **Rogers Brothers Corp.,** Dept. C&E, 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 168.

. . . Locate Subsurface
SAND and GRAVEL
. . . simplified with the Barnes Layer Method

Quick and Accurate . . . direct reading earth resistivity surveys provide soil contour profiles that clearly indicate type, location and depth of individual soil layers.

Earth Resistivity Measuring
"MICHIMHO" VIBROGROUND®

Model 274M is designed for use with the Barnes Layer Method. Reads soil conductance directly to locate gravel deposits, determine depth of bedrock and water table. Weight only 20 lbs. with self-contained vibrator power supply. Barnes Layer Surveys are readily made by non-technical operators using the VIBROGROUND.

Write for NEW Bulletin:
Just prepared . . . new MICHIMHO Application notes on Model 274M. Write today.
1-35.4
ASSOCIATED RESEARCH
3779 W. Belmont Ave. • Chicago 18, Illinois
For more facts, circle No. 461

INTRODUCING

OUTSTANDING PERFORMANCE, widespread use, and record tonnage production of BatchOmatic plants, of all sizes, have proved their revolutionary principles and features, first introduced in 1955:

First inherently automatic design . . . simultaneous measuring of all aggregate gradations . . . new principle of asphalt measuring . . . pre-set proportions . . . larger screening area, including full deck for fine material, and new adjustable directional throw . . . exclusive material flow selector . . . new Dyna-Mix pugmill for faster mixing, faster discharge . . . fast-stacking, self-contained sections with quick-disconnect couplings . . . and many others.

Now Barber-Greene announces the new BatchOmatic series, incorporating more outstanding advances—improvements based on the experience of all BatchOmatic plants operating on every type of job, producing every type of mix, including the abnormally rigid specs of the AASHO Test Road. These new features and improvements further increase ease and flexibility of operation, and daily tonnage output.

No lost seconds in automatic cycling—Only dry and wet mix cycles are controlled by timers. New sequence-relay system automatically starts each function the *instant* the previous one ends, substantially increasing tonnage.

New electric-over-hydraulic main controls—Controls electrically actuate hydraulic valves located directly on the rams, greatly reducing hydraulic piping, fittings and valves. Simpler construction and maintenance.

25% more weigh-hopper capacity—The unique multiple BatchOmatic weigh-hopper, which permits simultaneous measuring of all gradations, has been enlarged. Adjustable sidewalls are hydraulically controlled separately or simultaneously. Unlimited flexibility for handling all extremities of gradation percentages.

Multiple pre-set mixes—Easily switch to any pre-set mix. Pre-setting is instantly cancelled hydraulically for special mix. Automatic return to pre-set to resume production.

New, faster change of asphalt content—The unique, adjustable suction pipe measuring principle can now be quickly dial-set to the required number of pounds.

New fines control with fast change of proportion—Immediate dial-setting of fines content for any percentage of bulk or bagged mineral filler through new special vane feeder.

Also available with single weigh-hopper and power controls—These power-control towers have most of the BatchOmatic features, including interlocked dry and wet mix timers, and the asphalt measuring system. Available as 2- 3- 4- 5- and 6000-pound plants.

New, improved auxiliary units: New, improved Barber-Greene Dryers, Portable and Stationary Dust Collectors, Aggregate Feed Systems, and completely new Wet Scrubbers further increase production of all asphalt plants.

These are just the high spots. Ask for literature on these new advancements.

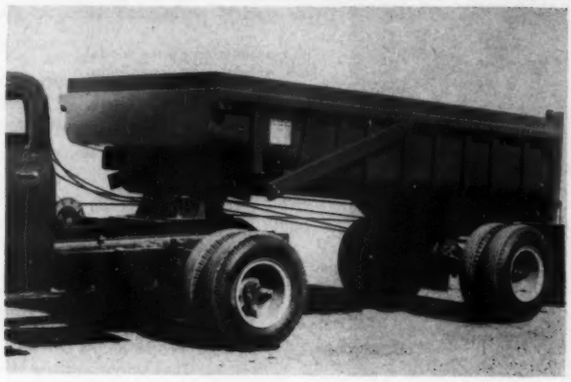
59-13-A

Barber-Greene BG
AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

For more facts, use Request Card at page 18 and circle No. 462

This Hobbs unit is said to be up to 1,000 pounds lighter than similar 10 to 12-cubic-yard-capacity units.



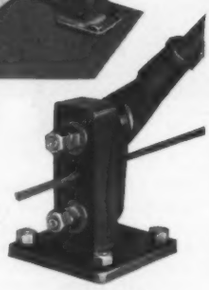
Heavy-duty dump trailer has lightweight design

A frameless, single-axle cable dump trailer that weighs only 5,300 pounds is announced by Hobbs Trailers.

Designated Model A-9000, the unit features a body rated for a payload of 40,000 pounds. Faster dumping with maximum stability is made possible by wide-set lift arms, of 6 × 2½-inch rectangular design, which tie into the top rail on each side of the trailer. The angle thus created between the lift arms and the cable reduces line pull necessary to start the dump cycle by as much as 22 per cent, and eliminates the necessity for a booster fifth wheel, the company claims. From level position to a full dump angle is said to take 10 to 12 seconds with the A-9000.

For further information write to Hobbs Trailers, Dept. C&E, 909 N. Main, Fort Worth, Texas, or use the Request Card at page 18. Circle No. 136.

ASSEMBLED FROM F 85 ALLOY AND CARBON ELECTRIC FURNACE STEEL CASTINGS



JUNIOR MODEL

JUNIOR MODEL

Write for Complete Information

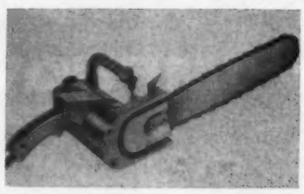
FARRELL-CHEEK STEEL COMPANY
SANDUSKY, OHIO, U.S.A.

BUCKETS • SPROCKETS • CHAIN • WHEELS • GEARS • SHEAVES • CABLE FITTINGS • BAR BENDERS, CUTTERS • R. R. CASTINGS • FIRE TOOLS, ETC.

For more facts, circle No. 463

Electric saw features 2,000-fpm chain speed

A full 2-hp 2,000-fpm electric chain saw is announced by the Milwaukee Electric Tool Corp.



Designed for heavy-duty use, the Sweet Sixteen weighs only 17½ pounds. The 16-inch saw features a 17½-inch guide bar with a ⅜-inch pitched chain having a single take-up adjustment that can be set in seconds.

The unit operates on either standard 115-volt ac-dc, or with portable generating equipment.

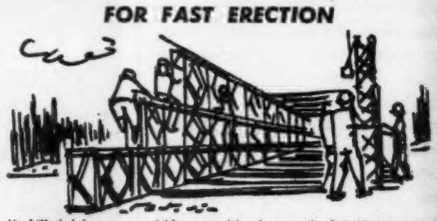
For further information write to the Milwaukee Electric Tool Corp., Dept. C&E, 5316 W. State St., Milwaukee 8, Wis., or use the Request Card at page 18. Circle No. 61.

save your voice
with the
Falcon Chief
and save money, too!
speak as you normally would—be clearly heard and understood up to ½-mile away!
Unique transistorized power megaphone—an instrument you will be proud to own. Gives up to 6,000 two-second amplified messages from standard replaceable battery. Light (3¼ lbs.)—easy to handle and use. Attractive red and gray polyethylene—built for abuse. Attractively priced for you, too!
WRITE for particulars — and free, informative "Sounds for Safety" folder! Dept. CE
Falcon® ALARM CO., INC.
SUMMIT, NEW JERSEY

For more facts, circle No. 464

WHEN TIME COUNTS
Look To
BAILEY BRIDGING

FOR FAST ERECTION



Unskilled labor can quickly assemble the standard bridging components. Bailey Bridging is the ideal answer for emergency or rush schedules to provide temporary or permanent bridging.

QUICK LAUNCHING

EASY PLANKING

Using a simple cantilever system, the bridge is quickly moved across the river. Can be decked with timber supplied locally or with special steel decking.

AND CLOSING THE GAP!

In record time—a bridge like this appears and immediately begins to carry traffic across former barrier. Such an economical method of spanning rivers, valleys and gorges is a major factor in opening remote territory for the tourist, mining and lumbering industries.

Every Part Fully Guaranteed

CONTRACTORS SERVICE LIMITED
SOLE DISTRIBUTORS FOR BAILEY BRIDGING IN CANADA AND U.S.A.
World Licensees, Thos. Storey (Engineers) Ltd., Stockport & London, England
38 Commercial Road Tele. HU 5-4424 Toronto 17, Canada

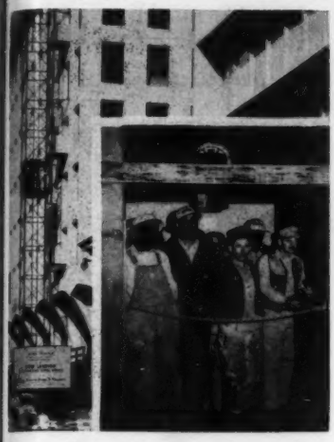
U. S. REPRESENTATIVES

Timberland Machines Inc.
169 Front Street
South Portland, Maine

Mason and Bacon Inc.
McClure Building
Frankfort, Kentucky

Bailey Bridge Equipment Co.
1767 Conejo Avenue
San Luis Obispo, California

For more facts, circle No. 465



The Mayco construction passenger elevator is shown in use on the new John Hancock office building in San Francisco. The 3,000-pound-capacity unit was installed in a 201-foot 4-post material tower. Inset shows crew riding in cage.

Construction elevator lifts men, materials

A new type of construction passenger elevator is announced by the Tubular Structures Corp. of America.

Adaptable to all 4-post material towers, the elevator offers such safety features as "dead-man" controls, automatic brake, top and bottom override limit safeties, and broken or slack cable safety. Other features include a 2-speed control from within the cage and a hydraulic system powered by either gasoline engine or electric motor. No electrical connections to the cage are necessary. The entire power unit is self-contained and easily moved.

A hydraulically controlled winch provides a smooth ride and permits the governing of maximum speeds, both up and down.

When not being used as a passenger conveyance, the Mayco elevator can be used as a material hoist, in which case it can be operated either from within the cage or from controls on the ground at the winch unit.

For further information write to the Tubular Structures Corp. of America, Dept. C&E, 2960 Marsh St., Los Angeles 39, Calif., or use the Request Card at page 18. Circle No. 53.

Suspended scaffolding speeds bridge painting

The easy lifting of suspended scaffolding on bridge beams is a feature of the new winch-model scissors-hangers offered by the Swing-Lo Suspended Scaffold Co.

A compact unit said to eliminate sway, and featuring an adjustable safety rail, the combination scissors-hangers are used in sets of two to lift hangers and scaffolding into place. The winches may then be removed and used elsewhere. Roller bearings for faster movement on beams are standard.

Optional equipment includes hangers and scissors for use on wire cables and concrete slab beams, all adjustable for working heights and equipped with safety rail holders.

For further information write to the Swing-Lo Suspended Scaffold Co., Dept. C&E, Covert, Mich., or use the Request Card at page 18. Circle No. 101.

JOINT AND CRACK PROBLEMS?
IN CEMENT & BITUMINOUS CONCRETE

THE WINDSOR ROUTER

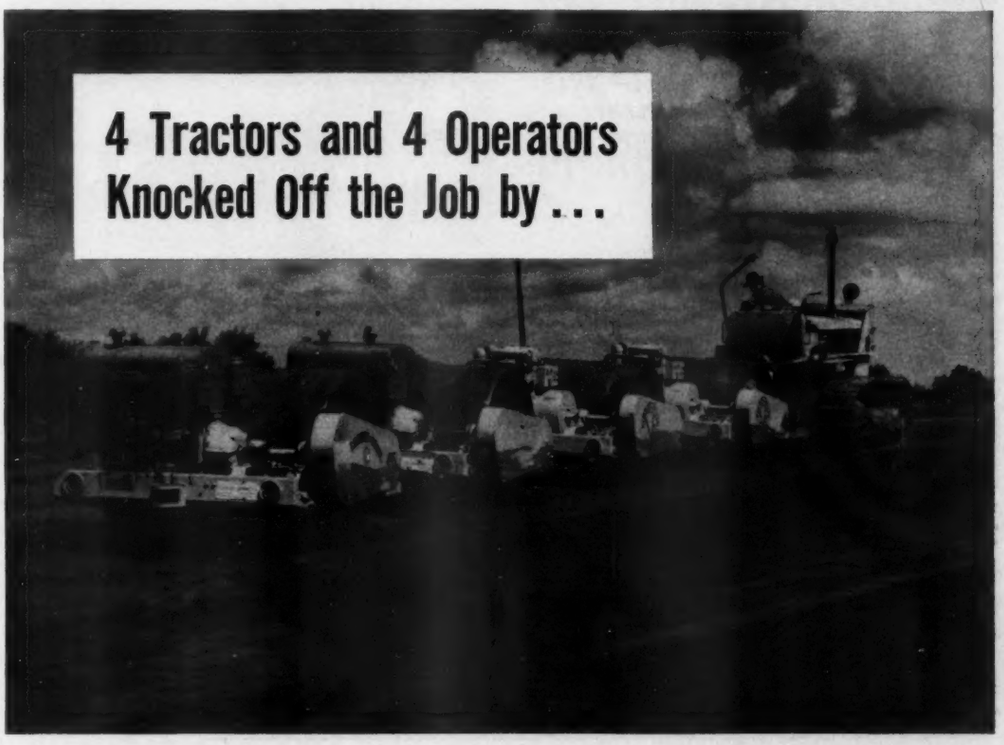
In use from Dow Airfield in Maine to Disneyland in California. 400,000 linear feet of joint & crack cleaning and routing completed in Connecticut.

LOW ORIGINAL COST • LOW OPERATING COST

A light, simple machine, the WINDSOR groover and joint cleaner leaves a clean face of newly exposed cement or bituminous concrete with NO spalling. Bits can be resharpened a number of times. The machine has been used on many projects, highways, bridges and airfields, to groove uncontrolled cracks as well as for joint maintenance.

WINDSOR MACHINERY CORP. 3311 Berlin Turnpike, Newington 11, Conn.

For more facts, use Request Card at page 18 and circle No. 466



EQUIPMENT LIST	
NUMBER OF MACHINES REQUIRED	UNIT
(1) X	50 TON ROLLERS
(3) X	TRACTORS
(1) X	SHEEPSFOOT ROLLERS
(5) X	TOTAL
(3) X	OPERATORS
	(4 CH-30s)

4 TERRAPAC VIBRATORY ROLLERS

Roy Rash and N. F. Luckie of Border Construction Company, Laredo, Texas, originally required 14 pieces of compaction equipment and 7 operators on this Texas State Highway road job . . . Four Terrapac CH-30s, in tandem, hit specified density in one pass — 98% C.R. . . . One sheepsfoot roller was used to break up clods and a 50-tonner made the material more uniform.

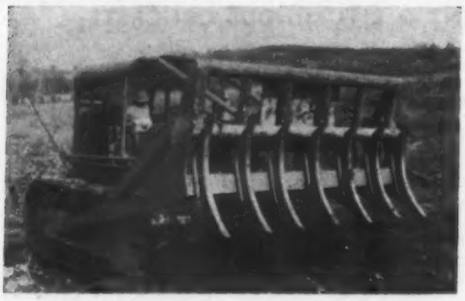
Results may not always be quite so sensational, but substantial savings in compaction are usually possible . . . In place compaction costs of 1½ to 2 cents per yard are not unusual . . . See your Terrapac distributor — let him arrange a demonstration at your convenience.

VIBRO-PLUS TERRAPAC

VIBRO-PLUS PRODUCTS, Inc.
STANHOPE, NEW JERSEY

WORLD'S LEADING MANUFACTURER OF VIBRATORY EQUIPMENT FOR OVER TWO DECADES!

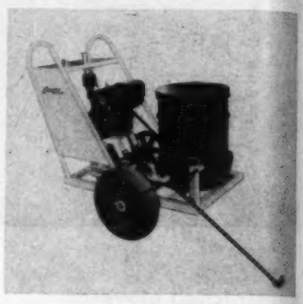
For more facts, use Request Card at page 18 and circle No. 467



All teeth are laterally adjustable on the Rockland B Series land-clearing rake, shown mounted on an International TD-24 tractor. As a tooth wears down, it may be taken off and turned over so that the other end may be used for digging; renewable tooth points are available for building up worn teeth. Any number of teeth may be used to suit job requirements. The Rockland attachment is available for all makes and models of tractors as a rock rake, general-purpose rake, or brush rake. The rake shown is also equipped with an optional brush and radiator guard. For further information write to the **Rockland Allied Equipment Co.**, Dept. C&E, 3778 W. Colonial Drive, Orlando, Fla., or use the Request Card at page 18. Circle No. 161.

Portable machine sprays concrete-curing membrane

A portable spraying machine, designed to spray concrete-curing membrane on freshly placed concrete, is announced by the Champion Mfg. Co.



For use in conjunction with a large sprayer—in areas where the latter unit cannot operate—the new unit is said to be especially suited for use on short runs of pavement, on highway cloverleafs, and for side-edge spraying after forms are removed. It has a 15-gallon tank.

Another application for the unit is the oiling of forms before use.

Two large pneumatic tires make the machine easy to push over any surface, and a rear swivel wheel provides easy maneuverability. Vibration is kept to a minimum, according to the manufacturer. A Briggs & Stratton 2¼-hp engine with a self-rewind starter rope provides the power.

All parts are said to be easily accessible and replaceable for quick on-the-job maintenance.

For further information write to the Champion Mfg. Co., Dept. C&E, 3700 Forest Park Ave., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 44.

Locking device reduces dump-body vibration

A device designed to reduce vibration and wear in dump-trailer bodies is announced by Trailco.

Suitable for installation on all makes and models, the Lock-O-Matic consists of heavy spring-loaded clamps that rigidly secure the body to the frame while the trailer is on the highway. The unit is automatic, self-contained, and cannot jam, the manufacturer claims.

When the hydraulic system is engaged to start the lift operation, an interim valve activates a clearing control on the mechanism and the clamps are swept free of the trailer body. Actual lifting force cannot be applied until the clamps are cleared. When the body is returned to road position, the clamps are automatically engaged and locked in position, assuring a vibration-free connection between trailer body and chassis.

For further information write to the Trailco Mfg. & Sales Co., Dept. C&E, Hummels Wharf, Pa., or use the Request Card at page 18. Circle No. 121.

FOR ECONOMICAL, HIGHER PRODUCTION

The answer to your most important production problem is the new Ross Portable 30-ton, 3-compartment Overhead Bin. Designed to fold compactly for legal highway travel, the highly portable unit will accommodate all Ross Porta-Plant with ease.

PORTABILITY IS NO SIDE LINE WITH US

CONTACT US FOR THE NAME OF THE DEALER NEAREST YOU

ROSS PORTA-PLANT

BOX 446 PHONE MI 5-2697 BROWNWOOD, TEXAS

For more facts, use Request Card at page 18 and circle No. 468

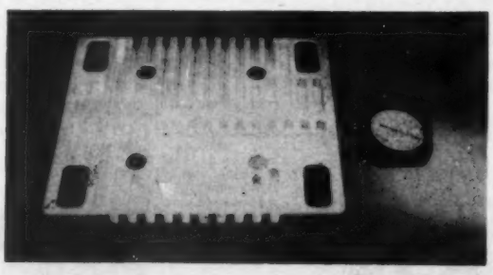
WEIGH VEHICLES UP TO 140,000 LBS. PER AXLE WITH HEAVY DUTY "M-1" LOADOMETER

NEW — PORTABLE — ACCURATE — SELF CONTAINED — DURABLE SCALE

The RIGHT Answer To The Heavy Duty Weighing Problem For Off Highway Vehicles On EARTH WORK AND MATERIAL HAULING.

Capacity 70,000 lbs.
30,000 kilos

Specifications on request



LOADOMETER CORPORATION, BALTIMORE 11, MD.

For more facts, use Request Card at page 18 and circle No. 469

Announce new line of safety hats, caps

A new line of Fiberglas, aluminum, and electrical (plastic) safety hats and caps is offered by the Boyer-Campbell Division of the White Sewing Machine Corp.

A polyethylene suspension that includes lock straps at its peak assures a minimum of 1¼-inch clearance between the crown and hat shell, yet maintains adjustment provisions for comfortable crown-depth fit.

Another feature is a plastic-zippered leather or Leatherette sweatband, which may be replaced in an instant without the need of replacing or disturbing any part of the suspension. Although the suspension is removed or replaced swiftly with snap-in "T-slots," it may be left intact for cleaning and sterilization. One hat or cap is provided to accommodate all head sizes from 6⅝ to 8.

For further information write to the Safety Division, Boyer-Campbell Division, White Sewing Machine Corp., Dept. C&E, 6540 St. Antoine St., Detroit 2, Mich., or use the Request Card at page 18. Circle No. 65.

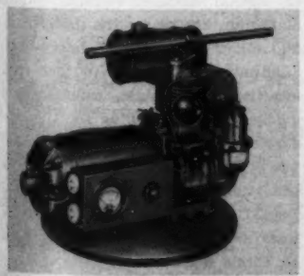
Sturdy portable generator designed for contractors

A heavy-duty 2,500-watt dc portable generator for construction operations is available from the Master Vibrator Co.

According to the manufacturer, a 6-hp 4-cycle Wisconsin engine is direct-connected to the compound-wound generator. Special heat-resistant valves in the engine provide longer engine life. Voltage is controlled by a hand rheostat and a rubber-mounted voltmeter.

The unit is available in either 115 or 230-volt models—13 amps at 115 volts and 6.5 amps at 230 volts. It is rated at 2,500 watts intermittent duty and 1,500 watts continuous duty, and weighs 177 pounds.

For further information write to the Master Vibrator Co., Dept. C&E, 266 Stanley Ave., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 79.



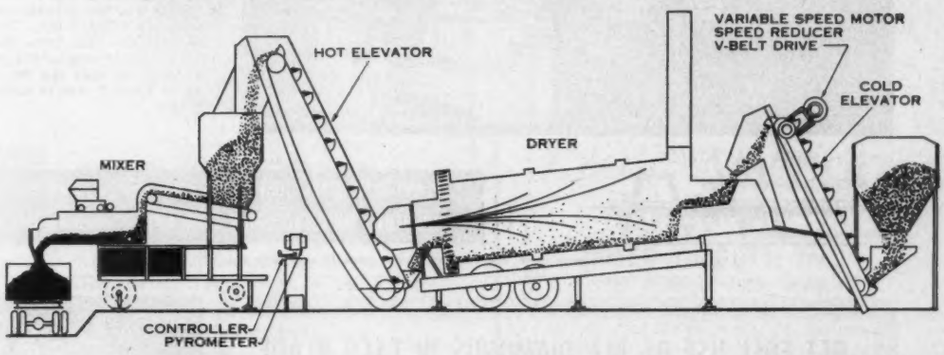
For more facts, circle No. 470→

A "migrant" bulk-storage plant for gasoline and oils that can be set up and torn down in 2 hours is announced by Petroleum Systems, Inc. Ranging in storage capacity from 5,000 gallons upward, the new type of bulk plant can use conventional steel tanks or the new collapsible-fabric tanks that roll up into a ball for transporting. For further information write to Petroleum Systems, Inc., Dept. C&E, 2914 E. Grand Blvd., Detroit 2, Mich., or use the Request Card at page 18. Circle No. 169.

engine power BY CATERPILLAR

ARE YOU OVERLOOKING THE MANY AVENUES OF REPOWERING PROFIT?

Discussions of repowering are usually confined to the replacement of worn-out engines in excavating machines or rock crushers. However, competition in construction today makes it imperative to look at the profitability of every machine in a contractor's spread. To increase profit, replacing engines or changing from utility power to portable electric set power may be required. Converting from gasoline to diesel can also take a machine "out of the red." Frequently changing over from mechanical drives to electric motor drives on some construction machines will enhance performance, production and profit.



For example, in an asphalt plant like the one shown, a power change increased production 15% and increased mobility, too.

Instead of the mechanical drives on product conveyors, the plant uses electric motors powered by the Cat Diesel Electric Set. No longer must the operator constantly check cold elevator feeding, drying temperature and moisture content of stockpiled aggregate.

Now a single switch at the dryer temperature gauge controls the cold elevator to supply exactly the amount of aggregate the unit's dryer is able to handle properly.

No need to adjust feed gates or dryer flame. Similarly, electrification of a crushing plant can offer sizable improvements in performance and production.

To help you see how your present power stacks up—and to analyze the right power for your equipment, you can receive a "Repowering Handbook Packet" on request. This informative material discusses power replacement in all its aspects and gives you money-saving guides to engine buying. Write to Engine Division, Caterpillar Tractor Co.

CATERPILLAR

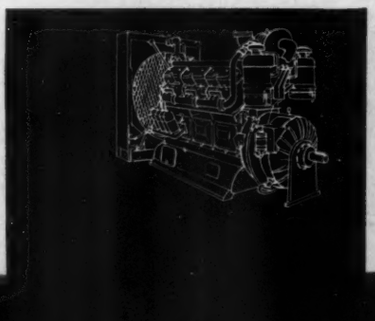
Engine Division, Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

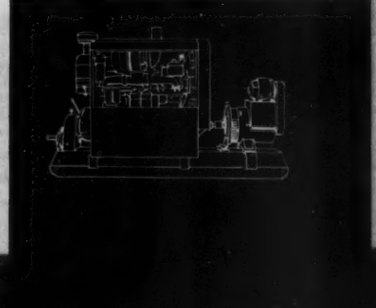
Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Mechanical drives, fluid couplings or torque converters are available on industrial versions of Caterpillar Diesel Engines.

Your electrical power requirements vary widely. Caterpillar offers portable or stationary Diesel Electric Sets from 30 to 350 KW.

New "two-handed" configurations increase engine's versatility—with electric generator at one end and a mechanical drive at the opposite end.





No moving parts under water with new-type dredger

Power for the Acrow unit can be supplied by mains, site power plants, or both diesel and gasoline-powered direct-driven pumps.

A dredger that has no moving parts working under water is announced by the Acrow Corp. of America.

The unit operates on a jet/venturi system, said to completely eliminate cutting heads, buckets, and blades. No solids pass through the pumps; the whole of the operation from the point of extraction to delivery is achieved by the venturi system, thus eliminating sludge impellers.

The dredging, including virgin ground, is achieved by powerful jets disintegrating the material in the vicinity of the suction pipe. The sludge is then drawn through the pipe by a jet-created vacuum. As there is a straight-through passage to the point of discharge, obstacles such as trees, roots, solid objects, vegetation, and boulders will not stop dredging operations, according to the manufacturer.

The Acrow jet dredger is said to be highly efficient when working in blue clay and sand. It can be designed to operate at a depth up to 100 feet, with normal delivery pipe sizes up to 12 inches in diameter.

For further information write to the Acrow Corp. of America, Dept. C&E, 231 Washington Ave., Carlstadt, N. J., or use the Request Card at page 18. Circle No. 157.

Utility tractor features no-shift direction change

The Work Bull Model 204 utility tractor is announced by the Massey-Ferguson Industrial Division.

Features include 3-point foot acceleration and instant no-shift change of direction. The right foot pedal is for forward movement, the left for reverse; the operator also controls forward and reverse speed with these pedals. The center foot throttle is for engine control only, providing rpm control for powering attachments when the tractor is not in motion.

Utilizing 4-speed transmission with Hi-Lo range, the Model 204 will achieve speeds up to 16 mph.

Other features include full-time power steering, multiple-disk hydraulically actuated reversing clutches, and a torque converter that automatically adjusts power between speed and load requirements.

Companion tools for the rig include the new Davis 102 loader, Davis backhoe, and other rear-end attachments such as the new Massey-Ferguson scarifier-scraper.

For further information write to the Massey-Ferguson Industrial Division, Dept. C&E, 1009 South West St., Wichita, Kans., or use the Request Card that is bound at page 18. Circle No. 137.

Aluminum transit mixers weigh 1/3 less than steel

Aluminum transit mixers are available from the Construction Machinery Co.

According to the firm, the weight of its 7-yard aluminum Transcrete is approximately 4,600 pounds, as compared to nearly 7,000 pounds for a conventional 7-yard steel model. All parts of the machine are made of special abrasion-resistant alloy aluminum except for the drive train and mixer controls. The heavy-duty aluminum chutes weigh 60 per cent less than steel chutes, which means quicker, easier handling for the operator.

For further information write to the Construction Machinery Co., Dept. C&E, 447 Vinton St., Waterloo, Iowa, or use the Request Card at page 18. Circle No. 64.

watco forms — the FORMula for profit

Install WATCO Steel Forms. The result? A modern casting system that provides economical, efficient facilities for profit-making precast and prestressed concrete production. There's a WATCO form for all typical prestressed structural units. These forms can be quickly installed for long-line casting, job-site production, combined with other units on your casting bed, or specifically engineered to meet your particular needs. Nebraska Prestress, Lincoln, Nebr., and R. H. Wright, Inc., Fort Lauderdale, Fla., whose yards are shown left to right, are among the many leading prestressers who have planned their production around WATCO forms. They have discovered that—"the better the equipment, the faster and smoother the job is likely to proceed". To make this discovery yourself, ask a WATCO man to call on you . . . SOON.

WRITE FOR CATALOG

PRESTRESSED CONCRETE INSTITUTE ASSOCIATE MEMBER

Manufacturers of WATCO Steel Forms

PLANT CITY STEEL CORP. · P. O. BOX 1308 · PLANT CITY, FLORIDA

CONVERTO MANUFACTURING COMPANY · CAMBRIDGE CITY, INDIANA

For more facts, use Request Card at page 18 and circle No. 471

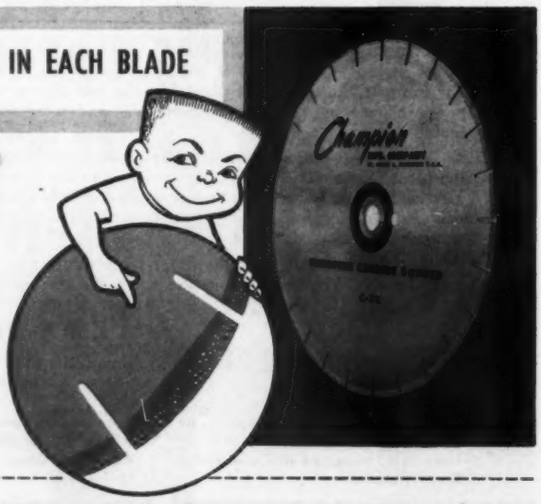
GET FULL USE OF ALL DIAMONDS IN EACH BLADE

with Champion's new

TUNGSTEN CARBIDE BONDED DIAMOND BLADES

featuring the exclusive

FLAT BOTTOM SEGMENT



The flat bottom segments on these new Champion blades permit each segment to be more securely soldered to the blade's core.

Since all diamonds are in the upper 2/3 of the segments, you get full use of all diamonds in the blades, while retaining width of cut.

Tungsten Carbide, the hardest of man made metals, holds the diamonds in place far longer, adding still more to your blade life.

Available in a complete range of specifications for cutting all aggregates and ages of concrete.

Write today for full details.

Champion MFG. COMPANY

3700 FOREST PARK AVENUE
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JEfferson 1-6688

Champion manufactures and sells through dealers in principal cities throughout the world, a complete line of concrete saws, reinforced abrasive blades and diamond blades.

Please send complete information on Champion Tungsten Carbide Bonded Diamond Blades for concrete sawing and name of my nearest Champion dealer.

Name.....

Address.....

City..... State.....

For more facts, use coupon or Request Card at page 18 and circle No. 472

40-ton capacity featured by new mobile crane

Bay City Shovels, Inc., announces the new Model 610-T8440 CraneMobile.

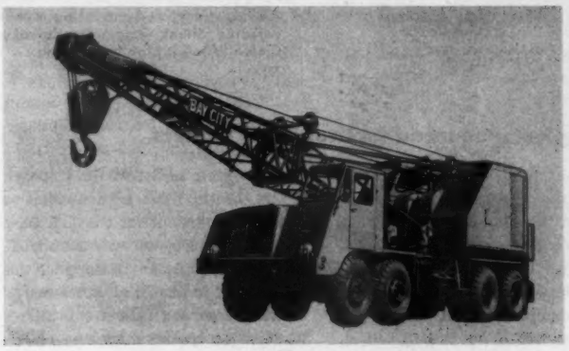
The 40-ton-capacity 8×4 carrier features removable outrigger beams and supports, air brakes on all wheels, power steering, and variable-speed transmission with 12 speeds forward and 3 reverse. Front-axle clearance is over 13 inches. The complete machine can easily and quickly strip down to 17,270 pounds per rear axle and 13,120 pounds per front axle, according to the manufacturer.

The interchangeable main boom and sections are designed to be equally adept at handling all types of loads from the standard 30-foot boom length up to 150 feet of boom and jib.

The Model 610-T8440 can easily lift and walk with a 63,000-pound load, and can handle 5,000 pounds over the rear on 150 feet of boom at a 100-foot radius, states the company.

The machine is convertible and may be used as crane, clamshell, dragline, or pile driver.

For further information write to Bay City Shovels, Inc., Dept. C&E, 2611 Center St., Bay City, Mich, or use the Request Card at page 18. Circle No. 156.



The new CraneMobile's main boom and sections are designed to be equally adept at handling all types of loads from the standard 30-foot boom length up to 150 feet of boom and jib.

THE
MORSE-STARRETT
WIRE ROPE
CUTTER

Cutting capacities up to 1 inch, 1-1/16 inch, and 1-1/2 inch.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

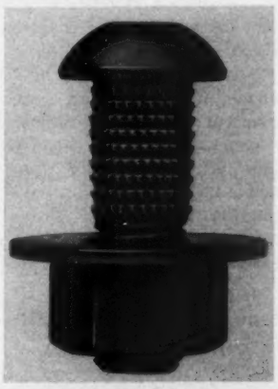
PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS COMPANY
1204 - 49th AVENUE OAKLAND 1, CALIFORNIA

For more facts, circle No. 473

New structural bolt is high-strength unit

A high-strength structural bolt said to combine the desirable features of both the Dardelet bolt and the high-strength bolt is announced by The Lamson & Sessions Co.



The new bolts are said to combine the tensile strength of a hex-head high-strength bolt with the bearing of a rivet, and to have maximum shear strength and resistance to slip.

Made of heat-treated high-carbon steel meeting ASTM A-325 specifications, the bolts can be assembled wherever a conventional high-strength bolt can be used in punched or drilled holes.

For further information write to The Lamson & Sessions Co., Dept. C&E, 5000 Tiedeman Road, Cleveland 9, Ohio, or use the Request Card at page 18. Circle No. 149.

Waterstop holds tight in concrete structures

The Rex Corp., subsidiary of American Enka Corp., offers a polyvinyl chloride waterstop called Rex-tite. It features an angle-ribbed design, in its 5, 7, and 9-inch widths, said to give the material greater holding power when embedded in concrete structures.

Light in weight and virtually unaffected by environment, thermoplastic Rex-tite waterstops require no vulcanizing, soldering, or brazing.

For further information write to the Rex Corp., subsidiary of the American Enka Corp., Dept. C&E, West Acton, Mass., or use the Request Card at page 18. Circle No. 102.

Hammerlok®
COUPLING LINK

MAKE UP YOUR OWN HERC-ALLOY SLINGS. No more waiting for new or repaired assemblies to reach you from the factory.
- No peening or welding
- Anybody can assemble
- Stronger than Herc-Alloy chain
- Thoroughly field tested
- Re-useable and SAFE

Write for Bulletin and name of your CM Distributor stocking Herc-Alloy chain, master links, hooks and Hammerlok coupling links.

CM CHAIN
COLUMBUS McKINNON CHAIN CORP.
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HERC-ALLOY®

For more facts, circle No. 474

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For more facts, circle No. 475

Having just rooted out a big tree, the versatile Shunk-Winget brush rake is shown lifting it high for hauling.

Brush rake announced for front-end loaders

A rake attachment for rubber-tire or crawler-type front-end loaders is offered by the Shunk Mfg. Co. This unit, known as the Shunk-Winget bucket-type brush rake, is interchangeable with the loader's bucket, and is designed to speed land-clearing jobs by raking out brush, hedgerows, and trees with minimum displacement of soil.

According to the company, the unit not only roots out trees and brush, but also carries them away and piles them as high as 8 feet for disposal.

The brush rake is available as optional equipment for the J. I. Case Models 800, 1000, W9, and W10 tractor shovels, and can be supplied for attachment to almost all other makes of track-type and rubber-tire bucket loaders. No special mounting equipment is required.

For further information write to the Shunk Mfg. Co., Dept. , C&E, Bucyrus, Ohio, or use the Request Card at page 18. Circle No. 16.

New pneumatic roller is self-propelled unit

A new Hercules pneumatic self-propelled roller is available from Wichita Steel Fabricators, Inc.

Designated Pneum-A-Pactor, the machine weighs 26,700 pounds with wet-sand ballast. It offers a rolling width of 83 inches and a 192-inch turning radius.

The transmission is a heavy-duty sliding-gear type, offering 5 speeds forward and reverse. Speeds range up to 16 mph.

For further information write to Wichita Steel Fabricators, Inc., Dept. C&E, 3400 N. Broadway, Wichita 4, Kans., or use the Request Card at page 18. Circle No. 66.

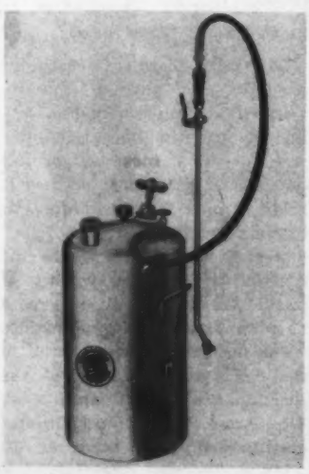
Heavy-duty spray outfit for concrete forms

Aeroil Products Co., Inc., announces a heavy-duty spray outfit said to be ideal for spraying concrete forms.

The unit is available in four sizes from 5 to 20 gallons. It is tested to 125 pounds, is furnished with a pressure gage, and is available with either a hand pump or compressed-air fittings.

A 3-foot heavy-duty spraybar is furnished as standard equipment with a squeeze-type control valve.

For further information write to the Aeroil Products Co., Inc., Dept. C&E, 18 Wesley St., South Hackensack, N. J., or use the Request Card at page 18. Circle No. 117.

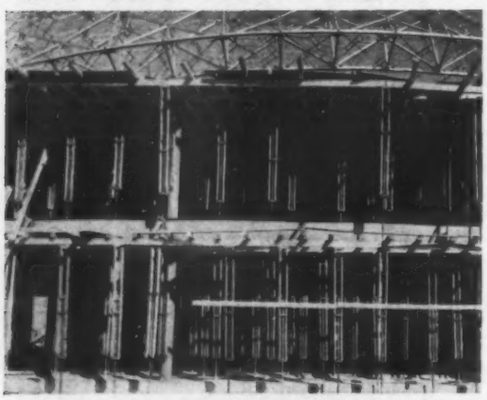


Usual or Unusual

Rooshors

THE ONE-MAN SHORE

Do the Job Faster

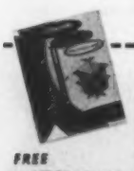


The practicality of ROOSHORS is well known—especially in the savings of everyday job shoring costs. They are also adaptable to the out-of-the-ordinary shoring job. The Gillmore-Olson Company, General Contractors for the unusual American Society For Metals Building, Cleveland, Ohio, made excellent use of 3100 ROOSHORS with their quick and easy adjustability to varying heights. The plus values of ROOSHORS in time savings, in practical application and in adaptability add up to the fact that ROOSHORS and only ROOSHORS offer so much. You're bound to save with ROOSHORS—the 1-Man Shore.

ROOS COLUMN CLAMPS hold column forms square and rigid with no shifting or spreading. Easily adjusted, can't slip or come loose—yet releases quickly for easy removal. Save job time—save labor with ROOS COLUMN CLAMPS.

BAKER-ROOS, Inc.

P. O. BOX 892 • INDIANAPOLIS 6, INDIANA



FREE LITERATURE
Write for Bulletin No. 259

BAKER-ROOS, Inc. C&E
P. O. Box 892, Indianapolis 6, Indiana
Gentlemen: Send your literature on Rooshors and Roos Column Clamps without obligation.

Name:_____

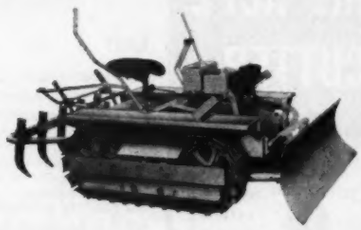
Organization:_____

Address:_____

City:_____ State:_____

For more facts, use coupon or circle No. 476

REDUCE JOB COSTS . . .
ELIMINATE HAND LABOR



AGRICAT with hydraulically-operated angle dozer is ideal for levelling, back-filling, bull-dozing, landscaping, snow removal or other light earthmoving jobs. By replacing the dozer with the Hilift Bucket assembly, the Agricat is quickly converted into an efficient loader that will easily load a 2-yard dump truck in 10 minutes. A backhoe attachment is also available.

Valuable Distributorships Open

AGRICAT EQUIPMENT CO.

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For more facts, circle No. 477

MOBILE OFFICE UNITS...

Save TIME . . . and MONEY!!!

MOBILE OFFICE Units are low in cost . . . Built to your specifications . . . There's a unit to fill your every need.

Because MOBILE OFFICE Units are easy to move from job to job, they enable you to have office, engineering, paymaster and other facilities at every point of your operation.

These units are economical, time saving, rugged and durable. They are self-containing, and are available with air-conditioning, and can be fitted to your specifications.

MOBILE OFFICES are being used by major contractors and other major businesses throughout the United States. Standard units may be rented, leased or purchased.

Remember, whatever your needs may be, a MOBILE OFFICE Unit can be built to fill your requirements.

If it's Mobile . . . We Build It!

MOBILE OFFICE, INC.
Phones; DOrchester 3-1048-9

7314 Stony Island Avenue, Chicago 49, Illinois

For more facts, circle No. 478

Wheel-mounted loader is versatile machine

A new wheel-mounted loader with a wide range of job applications is announced by the J. I. Case Co.

Designated Model 210, the machine reportedly lifts 1,000-pound bucketfuls to a height of 10 feet 5 inches in seconds. It dumps clean at 45 degrees, and has a 30-inch reach and 8-foot 5-inch clearance for fast dump-and-go. Close-coupled 11, 13, or 18-cubic-foot buckets cut 5 inches below grade, roll back 17 degrees for heaping, and tilt 90 degrees forward for fast backfilling and finishing.

The loader's 1,300-psi hydraulic power is controlled by handy feathered valves, which include lift, lower, hold, and "float" positions. In 5 minutes, it is claimed, the bucket may be interchanged for a pallet fork, bulldozer blade, crane boom, or sweeper.

Power is supplied by a 4-cylinder 34-hp engine developing 106 foot-pounds maximum torque.

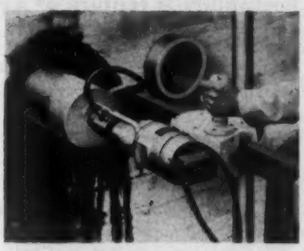
For further information write to the J. I. Case Co., Dept. C&E, 700 State St., Racine, Wis., or use the card at page 18. Circle No. 20.

New diamond core drills for reinforced concrete

A new line of core drills utilizing whole surface-set industrial diamonds for wet-drilling reinforced concrete, masonry, stone, and blocks of all types is available from the Felker Mfg. Co.

These Core-Lock drills are available in two types: "resettable," in which case unused or worn diamonds can be reclaimed, and "throw-away," an economy version.

Core-Lock drills are used with circulating water applied through a swivel. Drill diameters start at ¼-inch OD and extend through 14 inches OD. Special sizes beyond this capacity are also available.



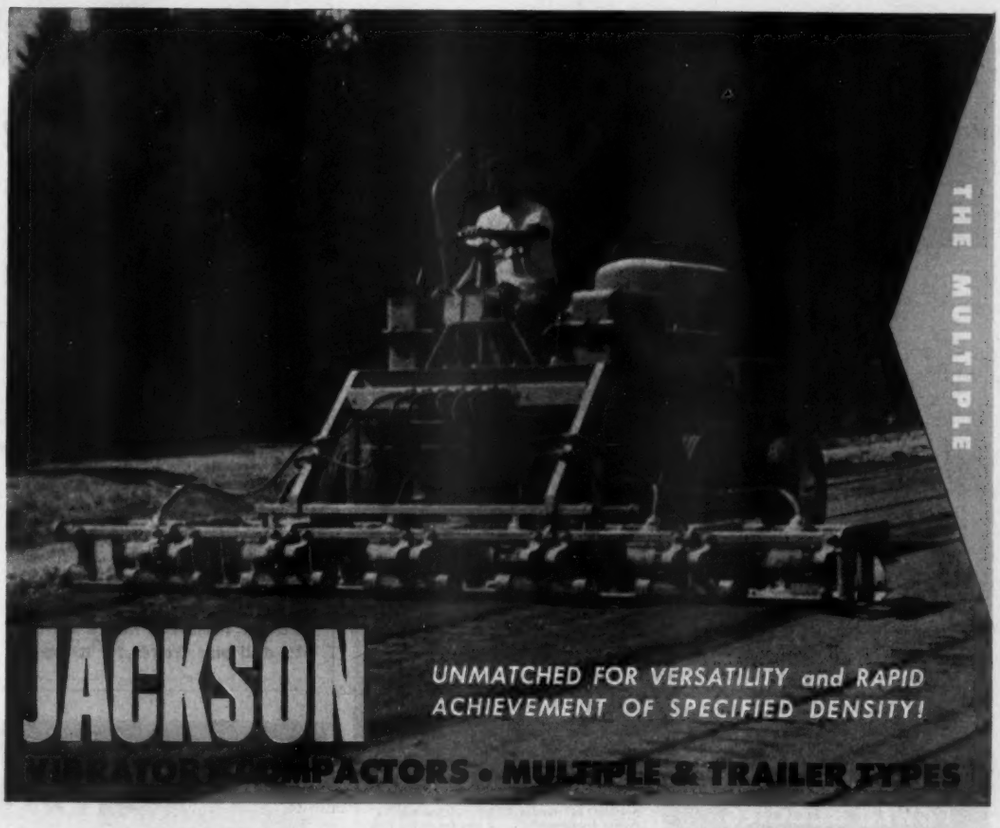
For further information write to the Felker Mfg. Co., Dept. C&E, 1128 Border Ave., Torrance, Calif., or use the Request Card at page 18. Circle No. 172.

Service-Master®
TWO MODELS . . . FOUR SIZES
for ½, ¾, 1 and 1½ ton chassis
Service-Master costs so much less in the long run that it's actually false economy to settle for any other make. Loaded with no-cost extras and put together to stay together. Compare . . . you'll see why Service-Master is your very best buy.

Model SM-15 is shown at top; with optional Canopy Top below.

SEND FOR THIS 6-PAGE FOLDER

McCABE-POWERS BODY COMPANY
3900 No. Broadway • St. Louis 15, Mo.
For more facts, circle No. 479



JACKSON
UNMATCHED FOR VERSATILITY and RAPID ACHIEVEMENT OF SPECIFIED DENSITY!
VIBRATORY COMPACTORS • MULTIPLE & TRAILER TYPES

Each of the compactor units employed in the workheads of these machines supplies FORTY-TWO HUNDRED 6,000 lb. VIBRATORY BLOWS PER MINUTE and achieves maximum density of any granular material used in base courses and fills in the fastest possible time.

Each compactor unit may be operated independently and hence units may be detached from the maximum coverage arrangement of 6 units in the workhead (13', 3") to ideally fit each job; or they may be regrouped in a wide variety of tandem arrangements for more rapid densification of narrower areas. And in the case of the TRAILER COMPACTOR as many as eight compactor units may be employed in two workheads of 4 each — one in front and the other following the trailer.

NEWLY DESIGNED COMPACTOR BASES PERMIT OPERATION OF BOTH THE MULTIPLE AND TRAILER COMPACTORS IN EITHER DIRECTION — NO DEADHEADING OR TURNING REQUIRED.

Used on nearly all of the nation's major highway projects, including the AASHO Test Road, the JACKSON MULTIPLE COMPACTOR has thoroughly demonstrated the outstanding advantages of this method of compaction. With the advent of the JACKSON TRAILER COMPACTOR it is conveniently adaptable to paving projects of nearly every type and size.

JACKSON TRAILER COMPACTOR — May be pushed or pulled by any prime mover capable of working speeds as low as 50 F.P.M. Towed to location at any road speed . . . operated in either direction . . . controlled by operator of prime mover. Power plant supplies both single and 3-phase 110-150 volt, 60-80 cycle A.C. and has many uses.

FOR SALE OR RENT FROM YOUR JACKSON DISTRIBUTOR. Name and descriptive literature sent on request.

JACKSON VIBRATORS INC., LUDINGTON, MICH.

For more facts, use Request Card at page 18 and circle No. 480

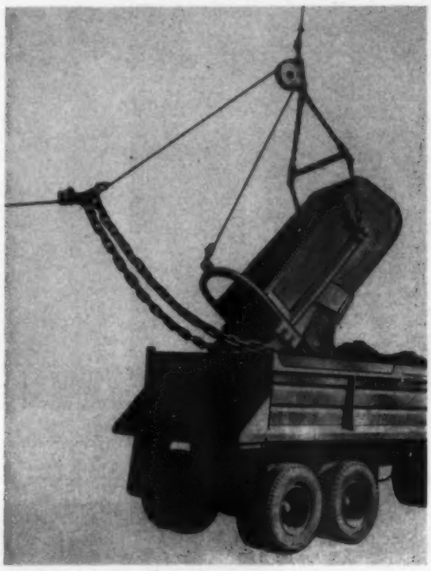
Portability is feature of new rotary compressor

Ingersoll-Rand announces the addition of a new 250-cfm size to its line of Gyro-Flo compressors for construction work.

The manufacturer states that this unit, with a completely new compressor system, offers nearly 20 per cent more capacity in a machine that is smaller and more compact than its predecessor, the Gyro-Flo 210. It is driven by a larger, more powerful engine, yet retains the same 1,800-rpm engine speed. Other features include full-length tool boxes for increased storage; provision for easy inspection of all compressor rotor vanes; side covers that fold back safely out of the way; and a 12-volt battery system for fast starting.

The Gyro-Flo 250 offers a choice of two compressor-matched drives—the new General Motors 4–53 diesel engine or the Continental M-363 gasoline engine. It is available with 2 or 4-wheel mounting, or with less running gear for truck or skid mounting.

For further information write to the Ingersoll-Rand Co., Dept. C&E, 11 Broadway, New York 4, N. Y., or use the Request Card that is bound in at page 18 of this issue. Circle No. 5.



The McCaffrey lightweight dragline bucket is designed for deep bites, simple control, and clean dumping.

New dragline bucket is light in weight

More payload with less weight is the major feature of a new dragline bucket offered by M. P. McCaffrey, Inc.

Designed for easy and medium digging, the bucket is engineered for deep bites, simple control, and clean dumping. Called Type A, it is available perforated or nonperforated, and is of all-welded construction. Sizes range from ⅜ yard to 3½ yards, with larger buckets up to 1 ton lighter than average conventional dragline buckets, according to the manufacturer.

For further information write to M. P. McCaffrey, Inc., Dept. C&E, 2121 E. 25th St., Los Angeles 58, Calif., or use the Request Card at page 18. Circle No. 120.

Rotary drill available in three new models

Three new and improved models of its Type 8 rotary drill are announced by the Davey Compressor Co.

Model M-8A is a rotary blast unit, designed for mounting on any standard truck. It has a rated capacity in excess of 1,500 feet, with a 2⅞-inch API drill pipe. Power for its operation may be drawn from the truck engine through a Davey heavy-duty power takeoff. The unit may also be operated by a separate gasoline or diesel power unit.

The drill mast has 25,000 pounds working capacity. It accommodates an 18½-foot kelly and 15-foot drill

THE '59 LINE OF Kelley

CONTRACTORS' EQUIPMENT

- UP-TO-DATE DESIGNS
- CAREFULLY ENGINEERED AND FULLY TESTED
- BUILT FOR ROUGH USE
- SPEEDS UP WORK... SAVES MONEY

POWER TAMPERS

Self-propelled . . . delivering 2400 impacts a minute. Two models: 18" wide shoe, and 36" wide shoe. For packing down earth backfill to maximum density next to foundations, on road-widening jobs, etc. Also for finishing blacktop . . . with heater shoe attachment available.

POWER BUGGIES

Positively tops for fast and dependable handling of concrete and other materials. Hydraulic mechanism dumps or spreads loads up to 10 cu. ft. and there's full power in *both* front wheels for extra traction. Safety step and guards protect operator.

SPACE HEATERS

What a blast! From the Kelley Hot Shot Space Heaters, one delivering 120,000 Btu/Hr and the other delivering 320,000 Btu/Hr. Let 'er blow outside . . . work goes on inside with Kelley Hot Shots! For work around walls, floors, scaffolds and hundreds of other construction jobs.

POWER TROWELS

Six models to choose from . . . 2 de-luxe Hydra-Trowels, 34" and 44" sizes, with fingertip blade control . . . and 4 super models with manually-adjusted blade pitch: 24" Kelley Bantam, 29" Kelley Boy, the popular 34" Kelley Chief and the big 44" Kelley Commander . . . a size for every job.

COMPACTORS

The new Kelley Compactor with "Compaction Control" . . . easier operating, faster, more powerful. For compaction-floating all types of concrete floors, for keying in surface hardeners, and for bonding dry-tamp floor topping to a concrete slab. Grinding attachments available.

Kelley MACHINE DIVISION
The Wiesner-Bopp Co., Inc.
785 Hinman Avenue
Buffalo 23, N. Y.

NAME _____
STREET _____
CITY _____ ZONE _____ STATE _____

For more facts, use Request Card at page 18 and circle No. 483

For more than 25 years, IGAS has proven its effectiveness as a joint sealing compound . . . Now IGAS can be sprayed to provide long-lasting membranes . . . Effectively seal deck slabs, tanks, and foundation walls with this tough, resilient, non-meltable mastic waterstop.

IGAS contains no solvents or drying oils and therefore, will not shrink, dry out or lose its effectiveness even after years of service . . . It will not become brittle in cold weather nor flow in hot weather . . . Application over large areas is both fast and economical.

IGAS is available in four consistencies:

PRESSURE GRADE — For locations under water pressure and nominal movement.

KNIFE GRADE — For locations under nominal pressure and rapid movement.

GUN GRADE — For gun applications.

EXTRUSION GRADE — For sealing or joining prefabricated items.

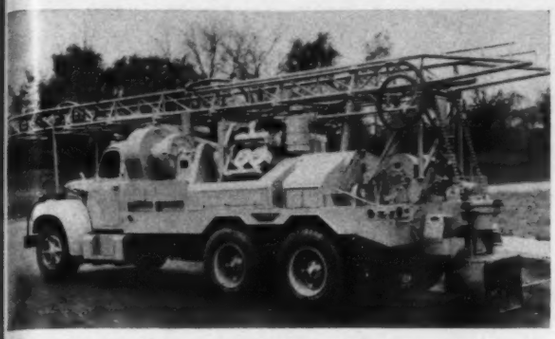
GRAY-IGAS — Same as regular IGAS. Available in gun and knife grades.

Sika SIKA CHEMICAL CORPORATION
PASSAIC · NEW JERSEY
COMPOUNDS FOR MASONRY and CONCRETE CONSTRUCTION

DISTRICT OFFICES: ATLANTA • BOSTON • CHICAGO • DALLAS • DETROIT • PHILADELPHIA
PITTSBURGH • SALT LAKE CITY — Numerous Additional Offices and Authorized Agencies the World Over

RELIABILITY • EXPERIENCE • SERVICE

For more facts, use Request Card at page 18 and circle No. 484



Designed for mounting on any standard truck, the Davey Model M-8A has a capacity rating in excess of 1,500 feet, with a 2⅞-inch API drill pipe.

pipe. Weight of the complete M-8A rig, less truck chassis, is 20,000 pounds.

The new Model M-8AL is similar to the M-8A but is equipped with a special long kelly and mast. It can drill 24-foot ledges without changing steels and has a rig weight of 26,000 pounds.

Model M-8MA is a combination air-blast and mud rotary rig. In addition to the regular M-8A features, it is equipped with one of several types of mud pumps available to match job requirements. Its rated capacity lists normal performance with air blast and 6-inch drill bit as 600 feet in fair to good sedimentary rock formation. In mud, capacity is over 1,000 feet, with a 9-inch bit. Maximum hole size is 20-inch-diameter. Rig weight is approximately 22,000 pounds.

For further information write to the Davey Compressor Co., Dept. C&E, Franklin Ave., Kent, Ohio, or use the Request Card at page 18. Circle No. 97.

Bottom hopper and van for dry freight in one

A trailer designed as a combination bottom hopper and dry-freight van is available from the Gramm Trailer Corp.

The floor of the trailer has two hinged sections that are approximately 94½ inches long and 90½ inches wide. These sections are raised and lowered by a removable hoist, and they open to the front and rear to form the walls of the hopper, which is completely sealed by a rubber gasket. The hopper is loaded through two hatches in the roof and has a capacity of about 1,000 cubic feet.

When the floor sections are lowered to their original position, the unit becomes a freight trailer with two full-width rear doors and a 42-inch side door.

For further information write to the Gramm Trailer Corp., Dept. C&E, 425 E. O'Connor Ave., Lima, Ohio, or use the Request Card at page 18. Circle No. 88.

New-type warning flasher employs neon-gas tube

The Model 5912-T7 high-intensity warning flasher is offered by the Northern Signal Co., Inc. The unit's operating system, a neon-gas tube combined with transistors, is said to be highly reliable and efficient.

The 5912-T7 has 7-inch-diameter lenses protected by a 5/16-inch wire guard. Its case holds a 12-volt "hot-shot"-type dry battery designed to give approximately five weeks of continuous operation. The generator unit is hermetically sealed and practically damageproof, claims the manufacturer.

For further information write to the Northern Signal Co., Inc., Dept. C&E, Saukville, Wis., or use the Request Card at page 18. Circle No. 143.

JERSEY SPREADERS

...World's fastest accurate paving Spreaders!

Lay a smooth, even spread at the rate of up to 1000 tons per hour—and do it easily and economically, fast and accurately without delay to hauling units. Two models available to meet all requirements.

JERSEY SPREADER

REG. TRADE MARK

Write now for complete information and illustrated literature.

TRACTOR SPREADER COMPANY

MANUFACTURERS OF THE JERSEY SPREADER

HASBROUCK HEIGHTS, NEW JERSEY

38-29

For more facts, use Request Card at page 18 and circle No. 485

ESSICK

VIBRATING COMPACTORS

Essick VR-28-W Self-Propelled Vibrating Compactor on Golden State Freeway

COSTS CUT IN HALF . . .
PRODUCTION TRIPLED . . .
SPECIFIED DENSITIES EXCEEDED . . .

ESSICK 28" VIBRATING COMPACTOR OUTPERFORMS OTHER EQUIPMENT ON SOIL OR ASPHALT

Charlie Brown of the Chas. T. Brown Construction Company states:
"We were working on the Golden State Freeway in Los Angeles, compacting backfill around bridge abutments and drainage pipes. At the start of the job, compaction costs were running about $1,300 per month per compaction unit which consisted of a compressor and three pneumatic tampers.

"Having successfully used Essick Vibrating Compactors on other projects, we felt that we could get better densities at less cost in the confined areas of this job with the Essick 28" self-propelled vibrating model.

"We put the Essick VR-28-W to work and cut monthly costs to about $650 per compaction unit (about one-half), tripled our production, and exceeded our best past compaction performance. Being self-propelled, the Essick 28" Vibrating Compactor is just the ticket for backfill operations on soil and in hard-to-get-at locations. It gives the most compaction at the least expense, and exceeds specifications in record time."

Many Contractors are finding that the 865 lb. VR-28-W, with its High Frequency Vibration, exceeds the compaction of a sixteen-ton static roller on soil. This multiple purpose tool has also revolutionized highway maintenance by putting down better asphalt patches at greatly reduced costs. Carrying hooks make it completely mobile, and being self-propelled, it will go just about anywhere compaction is required.

SEE YOUR ESSICK DEALER FOR A DEMONSTRATION

9 Models of Vibrating Compactors from 13" to 72" widths

Also 14 Models of Tandem Rollers from ½ to 14 Tons

ESSICK MANUFACTURING COMPANY

1950 SANTA FE AVENUE
LOS ANGELES 21, CALIFORNIA

850 WOODRUFF LANE
ELIZABETH, NEW JERSEY

Affiliated with THE T. L. SMITH CO., Milwaukee, Wisconsin

For more facts, use Request Card at page 18 and circle No. 486

Portable belt conveyor offered in three models

Barber-Greene announces three new portable belt conveyors for handling bulk material.

These units are available in belt widths of 18, 24, 30, and 36 inches, and in lengths from 33 to 60 feet in 3-foot increments.

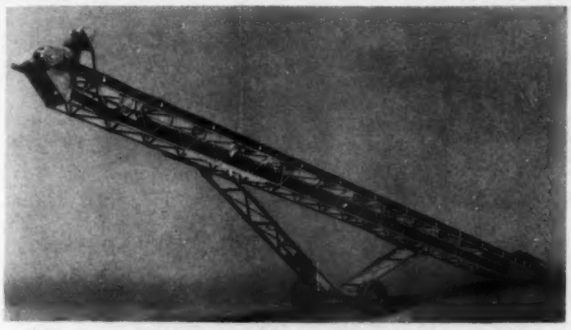
The Model PA-70 has a torque-arm drive powered by an electric motor. The motor is mounted overhead at the head end of the conveyor, making long V-belts, chains, or line shafting unnecessary.

The Model PB-70 has a V-belt and countershaft drive powered by a gasoline engine, and the simple design is said to make it unusually easy to maintain and repair.

The Model PC-70 has a line-shaft drive powered by a gasoline engine.

Large single tires and a convenient towing hitch allow these units to be towed over the highway or readily moved from one location to another in yard or pit.

For further information write to the Barber-Greene Co., Dept. C&E, 400 N. Highland Ave., Aurora, Ill., or use the Request Card at page 18. Circle No. 100.



This Barber-Greene conveyor, one of three new models, may be used for stockpiling, charging hoppers and bins placing concrete, and for feeding crushers and other equipment.

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.

New submersible pump has simplified design

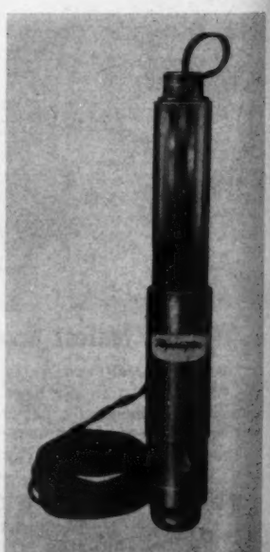
A 1/3-hp 2-wire submersible pump is offered by The Tait Mfg. Co.

Known as the Rapidayton 3 Star, the unit has an oil-filled Tait-made motor, and reaches to a depth of 90 feet at full 40-pound pressure. The motor has no capacitors or starting relays, and the third wire has been eliminated.

Stage construction features a design that incorporates hydraulically balanced nylon impellers and stainless-steel cases, both said to be highly resistant to abrasion. Larger impeller dimensions and a coaxial diffuser give 56 per cent more pressure per stage, according to the manufacturer.

Capacities range up to 520 gallons, and pressures to 60 pounds can be obtained.

For further information write to The Tait Mfg. Co., Dept. C&E, 500 Webster St., Dayton 1, Ohio, or use the Request Card at page 18. Circle No. 21.



Immediate Delivery!

ALLIGATOR TRACTOR

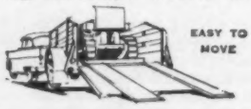
FIELD TESTED!

...a Dependable, Powerful, Light Weight, Low Cost Tractor

HALF THE WEIGHT...
HALF THE COST...
PACKED WITH POWER
TO MEET 1,000 NEEDS!

The ALLIGATOR weighs only 2,000 lbs., powered with an 18 H.P. 2 cylinder Wisconsin engine, and it delivers unrivalled power per lb.

This is the tractor that construction teams, builders and farmers have needed for years. It provides amazing mobility, utility, economy of cost and economy of operation. It's ideal as an extra clean-up machine on the big job, or as the all-purpose husky on the average job. (It lifts a full ½ yard or 550 lbs.) 18 attachments for forking, scooping, scarifying discing, hoeing, power take-off, dozing, scraping, tilling, high lift loading, electric system, hydraulic system, rear power lift, harrowing, cultivating, etc. Planetary steering, individually controlled tracks.



EASY TO MOVE

TALK'S FINE - PROOF IS BETTER

Watch the ALLIGATOR in action. Drive it yourself. Write for name of nearest distributor and to arrange for a *proof of performance* demonstration.

ALLIGATOR EQUIPMENT CO., INC.

ST. LOUIS 8, MISSOURI

Subsidiary of MIDWEST MOWER CORP.

Manufacturers of Chain Saws, Tillers & Power Mowers

For more facts, circle No. 487

PRESS

TRIPLE TAPERED DUMP BODIES

Designed primarily for handling sand and gravel, this outstanding Press body features a 3 taper design which allows for greater load on the front end to take advantage of strict weight laws. Available with underbody or front mount hoist. Write today for literature on Press bodies.

100 YEARS OF QUALITY BODY BUILDING

JACOB PRESS' SONS, inc.

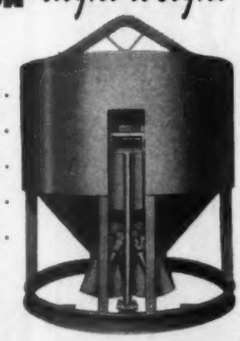
3312 S. Normal Ave., Chicago 16, Ill.

For more facts, circle No. 488

NEW! JOHNSON® *light-weight* CONCRETE BUCKETS

SIZES:	NET WEIGHT*
½ cu. yd.	355 lbs.
¾ cu. yd.	455 lbs.
1 cu. yd.	700 lbs.
1½ cu. yd.	840 lbs.
2 cu. yd.	1075 lbs.

*approx.



Light in weight, low in cost, this all-new series of concrete buckets from Johnson gives high ratio of capacity-to-weight. Makes each pour more profitable for you! Features: all-welded steel hopper, frame. All working parts above discharge point and well within bucket outline—protected during work, storage, shipment. 50° slope of cone bottom gives complete discharge of medium-slump concrete. Short-stroke, easy leverage handle. Double-clam gates. Stainless steel shafts in nylon bearings. Write today!

— — — — Mail to C. S. JOHNSON CO., Champaign, Ill.— — — —

Send more information on ..... cu. yd. light-weight concrete bucket

NAME .....

COMPANY .....

STREET ..... J919 C&E

CITY, STATE .....

JOHNSON

CHAMPAIGN ILLINOIS • STOCKTON CALIF

For more facts, use coupon or circle No. 489

The Model SP-900's higher unit pressures densify surfaces beyond traffic stress, resulting in a stable roadway, states the manufacturer.

Maximum-density roller features 64-inch width

A new pneumatic-tire roller having ground pressures exceeding truck load limits is announced by the Tampo Mfg. Co., Inc.

Especially designed for maximum-density rolling of asphaltic mats and all finish surfaces, this new Model SP-900 features 85 psi of compaction effort to meet latest specification requirements. These higher unit pressures densify surfaces beyond traffic stress, resulting in a stable roadway, the manufacturer states.

Specifications include a rolling width of 64 inches; tire inflation pressures up to 100 psi; 6 speeds in both forward and reverse; and automatic power reverse control.

For further information write to the Tampo Mfg. Co., Inc., Dept. C&E, P. O. Box 4248, Station A, San Antonio 7, Texas, or use the Request Card that is bound in at page 18. Circle No. 49.

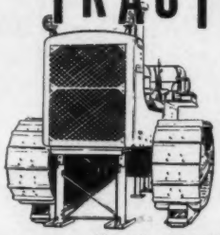
Sledging is eliminated with new highway forms

The Heltzel Cam-Lok road form embodies a new cam locking principle said to eliminate sledging and resulting form damage. It permits faster, easier form setting, since a simple quarter-turn of the cam draws treads and faces of both form sections into alignment. The resulting joint can't shake loose, regardless of the vertical stress imparted by the weight of machines or the horizontal thrust of spreaders and finishers, according to the manufacturer.

The new Cam-Lok forms are available in single or double-wedge types, with or without upturned base flange. Single and double-wedge channel stake pockets are formed with a shoulder that adds support to the outer edge of the tread. Full ¼-inch-thick angle wedges insure better stake retention.

For further information write to The Heltzel Steel Form & Iron Co., Dept. C&E, Warren, Ohio, or use the Request Card at page 18. Circle No. 2.

TRACTOR STANDS



The safe, convenient, time-saving method of supporting your tractor for repairs and maintenance. Tractor stands are designed to fit the draw bar, transmission case, springs or front end of all track-type tractors, and at less cost than you can build them in your shop. Order today a set of these safe, convenient tractor stands and save valuable time performing your maintenance.

FRONT STAND

One Required Per Tractor

Easy pull-a-pin adjustable height from 30" to 42" with 4" graduations. Length 36", shipping weight, 135 lbs. each, f.o.b. factory $42.50 ORDER DIRECT

REAR STAND

Two Required Per Tractor

Adjustable height from 21" to 25" with 4" x 4" oak block extension chained to stand. Shipping weight, 150 lbs. per pair (2) f.o.b. factory $39.50 ORDER DIRECT

Tractor stands are all welded, sturdily constructed of heavy-duty seamless steel tubing and channel iron. Load capacity is capable of supporting the weight of the heaviest tractors, plus maximum safety factor. 1" x 4" solid oak plank securely bolted to top of each stand eliminates metal to metal slippage.

TRACK JACKS

Place your tractor on stands safely in a matter of minutes with this ideal companion accessory, the Swick-Guth Track Jacks. Shipping weight, 300 lbs. per pair, f.o.b. factory $79.50 ORDER DIRECT

SWICK-GUTH — Rebuilders of broken or cracked diesel heads, blocks and transmission cases for over 25 years. Write for catalog.

SWICK-GUTH CO.
BOX 498, McPHERSON, KANSAS
"SPECIALISTS IN WELDING" "DIESEL CASTINGS"

For more facts, use Request Card at page 18 and circle No. 490

FLECO. LAND CLEARING EQUIPMENT SPECIALISTS

A six-toothed, yellow, brush beater—a Fleco Multi-Application Rake on a Cat D9 Tractor—clears the way for a reservoir in Washington. Four teeth were removed to allow heavy soil to drop through, for soil-free, easy-to-burn piles.

soil-FREE clearing
...with FLECO Rakes!

Fleco Root, Rock, Brush and Multi-Application Rakes are land clearing specialists that replace the earthmoving blades of your Cat Bulldozers. Designed to separate the debris from the soil, Fleco Rakes comb out roots, rocks and brush, letting soil sift through. Brush piles are soil-free for easy burning.

There's a Fleco Rake for every model of Caterpillar track-type Tractor . . . and for other makes, too! Your Caterpillar-Fleco dealer can recommend the one for your job, your tractor — just ask him!

Work both ends from the middle—a Cat D7 Tractor equipped, on the front, with a D7 MA Rake, on the rear, with a Pull Stumper, makes short work of clearing. Fleco Heavy Duty Cab Guard protects operator and equipment.

Boulders — kingsize — are tossed out of a sugar cane field by a Fleco Traxcavator Rake. The Rake replaces the standard bucket of the Traxcavator, multiplying the machine's versatility and profitability.

FLECO®
Rock, Root, Brush and Traxcavator Rakes • Tree Cutters • Stumpers • Undercutters • Cab Guards • Rootcutters • Root Plows • Tree Dozers • Rolling Choppers • Heavy-duty Tool Bars.

FLECO Corporation
P.O. Box 2370, Jacksonville, Florida
Fleco International, Inc. • Fleco Overseas Limited
P.O. Box 820, Nassau, N.P., Bahamas

For more facts, use Request Card at page 18 and circle No. 491

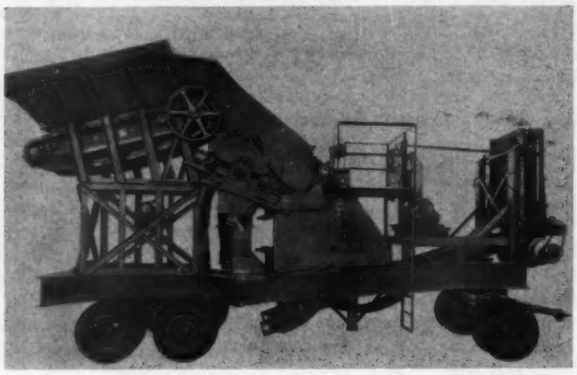
Add portable machine to primary-crusher line

The Kue-Ken portable primary crushing unit is announced by the Straub Mfg. Co., Inc.

Features include a heavy-duty apron feeder, 2-deck vibrating grizzly, Kue-Ken jaw crusher, folding-under conveyor, and push-button control to all units.

The machine is available with all-electric power, or with diesel engine with side-mount generator.

For further information write to the Straub Mfg. Co., Inc., Dept. C&E, 8383 Baldwin St., Oakland 21, Calif., or use the Request Card at page 18. Circle No. 15.



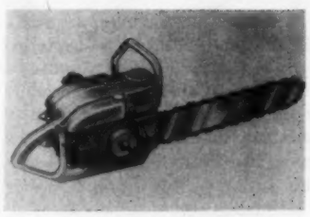
The Kue-Ken portable primary, latest addition to the Straub line of crushing equipment, is available in various sizes and with several combinations of components.

Offer newly designed line of chain saws

The Lancaster Pump & Mfg. Co., Inc., announces a new line of chain saws.

Known as the Whirlwind and the Handyman, both machines feature fully automatic centrifugal clutches, smoother cutting 7/16-inch pitch chain, and an air cleaner said to give much longer service.

For further information write to the Lancaster Pump & Mfg. Co., Inc., Dept. C&E, P. O. Box 778, Lancaster, Pa., or use the Request Card at page 18. Circle No. 111.



It's New!

NOW—AT LAST A MEASURING WHEEL THAT MEASURES ACCURATELY TO A FRACTION OF AN INCH!

Rolatape's amazing new Model 415 meets all your measuring needs — measuring quickly and surely over the most uneven and irregular terrain with no risk of human error. This time-saving instrument is calibrated to measure accurately in full view of operator as it is rolled along, giving measurements in inches (to ½ inch) on one side of measuring wheel, and tenths of a foot (to .5 of a foot) on the other. Sturdy and lightweight, it is equipped with automatic brake and built-in stand. Handle folds compactly. See one at your dealer's today.

SEND TODAY FOR FULL DETAILS

ROLATAPE Inc. Dept. CE-6
1741 14th Street,
Santa Monica, Calif.
Send me free details on ROLATAPE:
NAME
FIRM
ADDRESS
CITY, STATE

For more facts, use coupon or circle No. 492

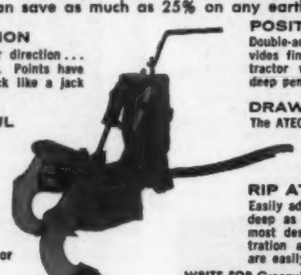
Big Ripper Tackles Tough Rock Jobs

Designed to use full power of IH TD15, TD18, TD20 or TD24

The tremendous power of the IH TD15, TD20 or TD24, plus the 10,000-pound Greenville tractor-mounted rock ripper, shatters rock and packed earth for easy scraper loading. On many jobs explosives, shovels and trucks are eliminated. Put this power-packed team to work for you. Your IH dealer can give you the facts. Let him show you how you can save as much as 25% on any earth or rock moving job.

LIVE SWIVEL ACTION
Shanks swivel 15° in either direction . . . follow tractor like a trailer. Points have live action that shatters rock like a jack hammer.

RUGGED POWERFUL SHANKS
Scientific contour gives extra strength at strain points and pulls points down deep . . . rocks roll out and clear of head-frame. Made of tough, heat-treated, manganese-moly steel. Mount one, two or three shanks as needed.



POSITIVE CONTROL
Double-acting hydraulic system provides fingertip control and puts full tractor weight on points for fast, deep penetration.

DRAWBAR TAKES PULL
The ATECO drawbar replaces the tractor drawbar and drawbar brackets. Clevis is accessible with ripper installed.

RIP AT ANY DEPTH
Easily adjusted to permit settings as deep as 24". Points are always at most desirable angle for best penetration and splitting action. Points are easily replaced.

WRITE FOR Greenville Bulletin IH-658. It gives complete data on the Greenville-Ateco ripper.

See it at your International-Harvester Dealer's

GREENVILLE
STEEL CAR COMPANY
ATECO DIVISION
Greenville, Pennsylvania

For more facts, use Request Card at page 18 and circle No. 493

LE-HI

HOSE COUPLINGS
FOR EVERY APPLICATION

WRITE FOR BULLETIN 34

HOSE ACCESSORIES COMPANY
PHILADELPHIA 32, PENNA.

For more facts, circle No. 494

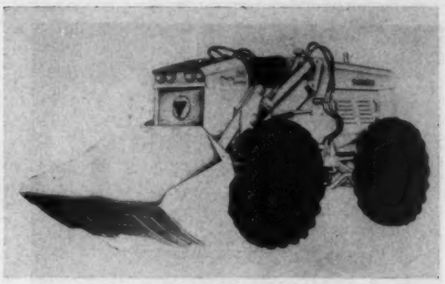
New front-end loader carries 5,300 pounds

The new Tractoloader Model TL-14 incorporates special features designed for speeding excavating-loading work and easy operation.

The 14,480-pound unit has a carry capacity of 5,300 pounds, maximum lifting capacity of 11,000 pounds, and a breakout force of up to 17,800 pounds. Six buckets are available for use with the TL-14, ranging in size from 1 to 3 cubic yards. The buckets tip back 42 degrees at ground level for fast loading. For maximum stability while traveling, the bucket can be tipped back at an angle of 47 degrees when only 14 inches above the ground.

Maximum dumping clearance under the hinge pin is 10 feet 5 inches. Depending upon the bucket used, dumping clearance under the bucket cutting edge ranges from 8 feet 3 inches to 8 feet 5½ inches. At maximum dumping height, reach from the front of the tires to the cutting edge varies from 2 feet 11 inches to 3 feet 7 inches. From the front of the frame, the reach is 2½ inches greater.

The machine is powered by either an Allis-Chalmers 86-hp, 6-cylinder gasoline engine or an 81.5-hp diesel. It has a 3-speed full power shift transmission. One lever controls all speeds in both forward and reverse.



The TL-14 Tracto-Loader, with a 5,300-pound carry capacity, is available with any of six buckets from 1 to 3 yards.

Top travel speed is 26 mph.

Other features include rear-wheel power steering and four-wheel power brakes that can be operated by either the right or left foot; planetary axles, pin-connected to a one-piece welded frame; and a 6-way adjustable operator's seat.

For further information write to the Tractomotive Corp., Dept. C&E, Deerfield, Ill., or use the Request Card at page 18. Circle No. 128.

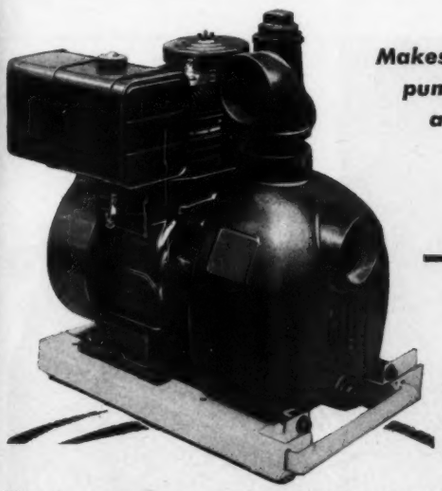
Tool fastens to steel and concrete under water

An improved Ramset tool for instantaneous fastening to concrete and steel under water is announced by the Olin Mathieson Chemical Corp.

Designed to function at depths up to 300 feet and for prolonged periods of immersion, the tool can set fasteners instantaneously into ⅝-inch-thick steel plate and high-strength concrete.

A capsulelike barrel is factory-loaded with a fastener and powder load, and hermetically sealed at both ends. After the tool is fired, the entire barrel is discarded and replaced under water. The tool can be cocked easily so that a buoyant diver does not push himself away from the work.

For further information write to the Ramset Fastening System, Olin Mathieson Chemical Corp., Dept. C&E, 12117 Berea Road, Cleveland, Ohio, or use the Request Card at page 18. Circle No. 103.



Makes the toughest pumping jobs a simple chore . . .

This new

HALE 30-T

Weighs only 143 lbs.; Model shown has pull-out handles—two men can easily carry it anywhere; yet it pumps 20,000 G.P.H. at free flow discharge with ample reserve.

Where else can you find a pump light enough for two men to carry easily, yet big enough . . . tough enough . . . to do all this?

Pump 3 ft. of water from a 50' x 20' cellar hole in ..... 1 hr.
8 ft. of water from a 6' x 9' elevator shaft in ... 9 min.
1 ft. of water from the same shaft in ..... 1 min.
18 in. of water from a 10' x 30' excavation in ..... 10 min.

Where else can you find a pump which features: a semi-open impeller with "clogless" type operation for safe, fast handling of water; external adjustment for wear; a simplified self-priming system that eliminates fussy valves and gadgets; simple "O" ring seals instead of gaskets . . . a pump designed just for you?

The 30-T is powered by a 9 h.p. Briggs and Stratton, 4-cycle engine. Also available in HALE'S protective, wrap-around frame; mounted on wheels, or on rubber-cushioned steel channels.

Also the 30-T's rough, tough kid brother . . .

the "TORRENT" Model 20-T

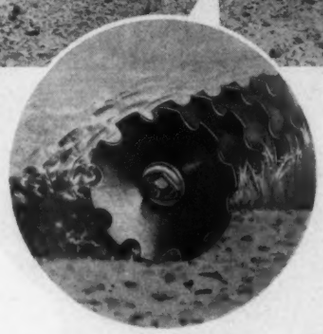
Pumps 7,000 U.S. gallons per hour with ample reserve. 3 Models to choose from: Model 20-T Gasoline-driven unit; Model 15TP pedestal pump for available power; Model 15TPE electric motor driven unit.

Write for full information and prices, today

HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

For more facts, use Request Card at page 18 and circle No. 495

BUILD A PERFECT SUBBASE THE ROME WAY



Cut, mix, aerate with a Rome Disk Plowing Harrow

Here's what happens when a Rome Disk Plowing Harrow works your fill: sharp disk blades, backed by plenty of weight, penetrate deep — slicing through stiff, packed material. Each disk blade is positioned at just the right angle and spacing to cut deep, pulverize, mix, and return the material in place. Coarse and fines are mixed, not separated. Exclusive Rome design works the fill without throwing up ridges. No special power take-off or auxiliary equipment is necessary . . . low maintenance and operating costs. Proved and approved on many Turnpikes and new Interstate Highway jobs . . . and for aerating, blending, mixing soil cement and sand asphalt base-work on secondary roads.

Have your Rome-Caterpillar Dealer demonstrate the Rome Disk Plowing Harrow you need. There is a size and type to match your job and equipment. Rome Plow Company, Cedartown, Georgia.

ROME.

YOUR ROME DEALER IS YOUR CATERPILLAR DEALER

For more facts, use Request Card at page 18 and circle No. 496

An operator uses the button-weld attachment with the A. O. Smith Corp.'s CP-C-OManual welding package. Shown here are the three basic elements that make up the package: 600-amp constant-potential power source; wire drive unit; and semi-automatic hand gun.

Offer new attachment for welding package

A new method of joining steel has been introduced by the Welding Products Division of the A. O. Smith Corp.

The finished weld resembles a rivet or button head and is made possible through a new button-weld attachment for the company's CP-C-O-Manual welding package. The attachment is expected to find wide application in the welding of metals from 0.035 to 0.187 inch thick.

According to the manufacturer, the versatile process is a precision method of welding, and uses carbon dioxide gas as a shielding agent. A consumable electrode adds filler metal to the weld. The size of the button can be changed to suit the application by varying voltage, wire-feed speed, or weld current, as well as the number of time cycles—thus eliminating chances for operator error and consistently giving identical welds.

The new process is said to include the following benefits:

1. Surface conditions of the steel being welded do not seriously affect quality of the weld, since no dependence upon surface electrical resistance for consistent welds exists. Welding can be performed through oil and grease.

2. Maintenance costs are low—primarily because no costly maintenance of tips is required.

3. The lightweight gun permits high production rates since it can be moved rapidly along the work. Large parts do not need to be moved to the welder.

For further information write to A. O. Smith Corp., Welding Products Division, Dept. C&E, 3533 N. 27th St., Milwaukee, Wis., or use the Reader Request Card at page 18. Circle No. 56.

Add loud warning horn to flasher-light unit

Highway crews are given double protection against traffic hazards by the Falcon traffic flasher alarm: to the flashing red warning light, a loud horn has been added. This horn is triggered when a vehicle overrides the light and runs over an air hose placed ahead of a closed lane. The loud blast of the horn not only warns the motorist to slow down and move

RED SEAL RUGGEDNESS

AND

RIGHTNESS OF DESIGN

are helping to build product acceptance for leading builders of

SPECIALIZED EQUIPMENT

Ingersoll-Rand compressor operating paving breaker. Power: Continental.

In design, in materials, and in lasting performance, Continental Red Seal engines give you the benefit of 57 years' aggressive engineering. Traditional Red Seal ruggedness finds its natural reflection in rock-bottom upkeep costs. You find Continental-powered equipment on the job—wherever there's a job to be done—in excavating, ditching, concrete ripping, railway building and maintenance, and all phases of road construction. Every Continental Red Seal is not only built for the job, but backed by parts and service facilities the world over.

CONTINENTAL MOTORS ® Powering the Nations AMERICA'S STANDARD

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6218 CEDAR SPRINGS ROAD, DALLAS 35, TEXAS • 1252 OAKLEIGH DR., EAST POINT (ATLANTA) GA.
ST. THOMAS, ONTARIO

For more facts, use Request Card at page 18 and circle No. 497

Safe-tie with Cal-Tie Wire

in convenient reel dispenser

The giant steelman reflects CF&I's policy of improved steel products for all industries, including such "safety first" products as Cal-Tie Wire. The belt-borne dispenser for this quality wire offers these benefits:

- **Safety**—The light, compact dispenser (total weight with wire is 7 pounds or less) leaves hands free . . . eliminates danger of eye and face injuries that result from loose ends of shoulder coils.
- **Economy**—Handy reel allows worker to use exact amount of wire needed . . . ends wasteful practice of discarding odd lengths of wire . . . prevents wire loss resulting from snarled or tangled coils.

Cal-Tie Wire is easy to insert in the dispenser and is available—annealed or galvanized—in gages 14 through 20. For complete details and quick delivery, call your nearest CF&I office.

CAL-TIE® WIRE

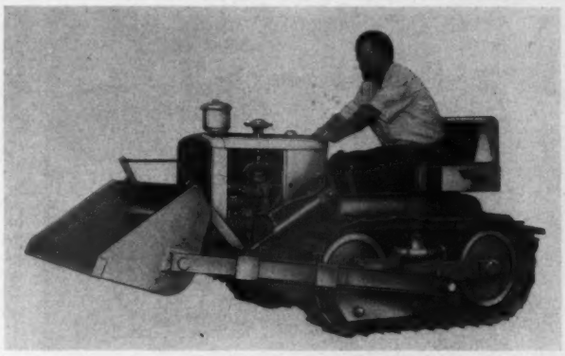
THE COLORADO FUEL AND IRON CORPORATION

CF&I STEEL

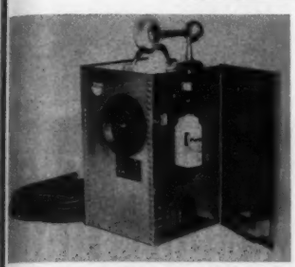
In the West: THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Denver • El Paso • Farmington (N. M.) • Ft. Worth • Houston • Kansas City • Lincoln • Los Angeles • Oakland • Oklahoma City • Phoenix • Portland • Pueblo • Salt Lake City • San Francisco • San Leandro • Seattle • Spokane • Wichita
In the East: WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo • Chicago • Detroit • New Orleans • New York • Philadelphia
CF&I OFFICE IN CANADA: Montreal
CANADIAN REPRESENTATIVES AT: Calgary • Edmonton • Vancouver • Winnipeg

6957

For more facts, use Request Card at page 18 and circle No. 498



Powered by a 2-cylinder 18-hp engine, the Alligator Model 66G crawler tractor lifts a full ½ yard or 550 pounds. Eighteen separate attachments are available for this 2,000-pound machine. Other features include planetary steering and individually controlled tracks. For further information write to the **Alligator Equipment Co., Inc.,** Dept. C&E, 4927 Delmar Blvd., St. Louis 8, Mo., or use the Request Card at page 18. Circle No. 138.



wer, but warns construction and maintenance crews to get out of the way.

The horn and warning light are combined in a compact unit that is portable, durably constructed, and waterproof. The horn is mounted on a steel-box container that measures approximately 10×10×15 inches high. This box houses the light, a standard lantern battery by which the light is powered, and the horn operating mechanism which includes a replaceable can of Freon by which the horn is powered.

For further information write to the Falcon Alarm Co., Dept. C&E, 243 Broad St., Summit, N. J., or use the Request Card at page 18. Circle No. 52.

DUFF-NORTON Ratchet Jacks *are safer...last longer*

safer...

because the forged steel rack bar on Duff-Norton ratchet jacks is larger and stronger than the rack bar on any other make. Also, these jacks can not trip under load which guards men and equipment.

last longer...

because the exclusive spring mechanism makes maintenance easy. It is a patented self-contained, one-piece unit. It can be adjusted, repaired or replaced without taking the jack apart. Tension can be tightened by the turn of a screw. It can be cleaned by removing cover plate and four cotter pins. After years of service a worn mechanism can be quickly replaced.

Years of hard use are built into every one of the nine models—capacities range from 5 to 20 tons. For rugged, dependable, fast lifting power at minimum cost ask your distributor for Duff-Norton Ratchet Jacks.

DUFF-NORTON COMPANY

P. O. Box 1889 • Pittsburgh 30, Pennsylvania

COFFING HOIST DIVISION • Danville, Illinois

DUFF-NORTON JACKS
Ratchet • Screw
Hydraulic • Worm Gear

COFFING HOISTS
Ratchet Lever
Hand Chain • Electric

For more facts, use Request Card at page 18 and circle No. 500

GOT WATER?

GET FLYGT

...THE 24-HOUR PUMP

Reasons for the world-wide success of FLYGT B-80L pumps:

Electric, fully submersible, fully portable (185 lbs)
Instant pumping — no priming, no installation
Runs dry without damage
Takes high proportion of solids
Practically no maintenance or supervision
Frost- and fire-proof
6 hp, 3" hose, 330 GPM, max. head 170 ft.

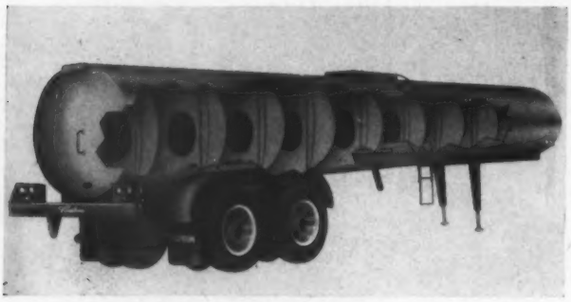
Also: *FLYGT B-38L — 1.8 hp, 75 GPM, 70 lbs, max. head 90 ft., 1½" hose; FLYGT B-80 Marine—6 hp, 330 GPM, max. head 145 ft., 3" hose; FLYGT B-150/200L — 65 hp, 3,000 GPM, max. head 220 ft., 6" or 8" hose, 1200 lbs. Higher heads with FLYGT pumps in tandem.*

FLYGT

WEST OF THE MISSISSIPPI:
Stance MFGS. & SALES INC.
1668 Ninth St.
(Corner of Olympic & Ninth)
Santa Monica, California.

EAST OF THE MISSISSIPPI:
STENBERG MANUFACTURING CORPORATION
Hoosick Falls, N.Y.

For more facts, use Request Card at page 18 and circle No. 499



An important feature of the new asphalt tank trailer is the high degree of insulation provided by the sleeve-type outer wall, which allows hot asphalt to be transported in the most extreme weather.

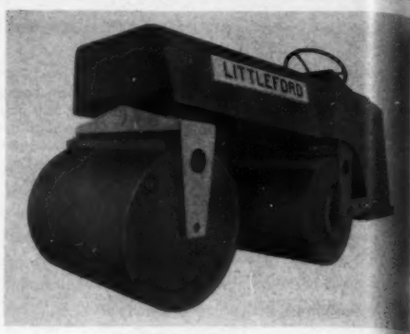
Asphalt tank trailer has double-wall design

A new hot-asphalt tank trailer is available from Custom Head, Inc.

The unit features double-wall construction, with the outside wall designed to coincide with the expansion and contraction of the inner wall. According to the manufacturer, the sleeve-type outer wall offers a high degree of insulation.

The shape of the head is designed to match the outside shape of the tank, and is deep-dished for added strength and rigidity.

For further information write to Custom Head, Inc., Dept. C&E, 1631 College St., Springfield, Mo., or use the card at page 18. Circle No. 89.



Ease of maneuvering and a time-saving operator's platform are features of Littleford's new 1-ton roller.

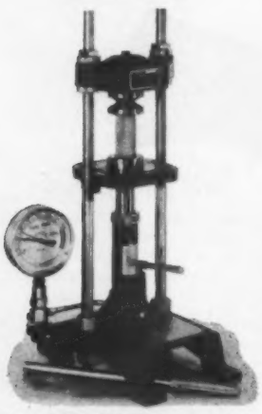
Add new 1-ton machine to portable roller line

Littleford Bros., Inc., announces a new portable tandem-type 1-ton roller.

Designated Smooth-Topper Model 125, the machine is said to feature exceptional maneuverability, as well as an operator's platform that eliminates the need to climb down, over, or through the roller and permits quick access to tools.

For further information write to Littleford Bros., Inc., Dept. C&E, 457 E. Pearl St., Cincinnati 2, Ohio, or use the Request Card at page 18. Circle No. 105.

CUT ROAD BUILDING COSTS with the CARVER LABORATORY PRESS



This versatile, hydraulic Press quickly repays its cost in all kinds of pressing tests. The testing of native materials for more economical Road-base construction is only one example of the possible savings through laboratory research with the Carver Laboratory Press.

Compact, self-contained, this press provides controlled pressures to 20,000 lbs. Interchangeable accessories are available for

• CRUSHING TESTS • BRIQUETTING
• BREAKING TESTS • SHEAR TESTS
• BENDING TESTS

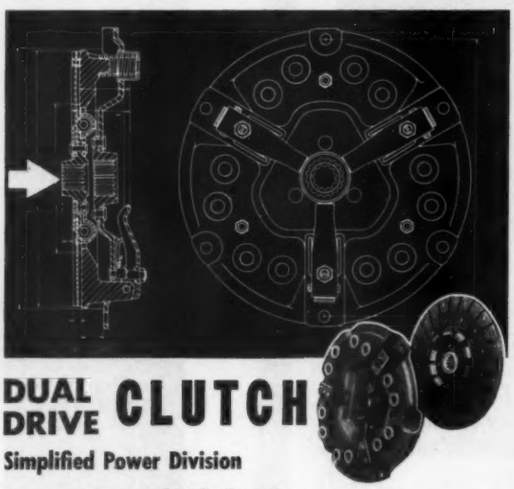
FRED S. CARVER INC.
HYDRAULIC EQUIPMENT
7 CHATHAM ROAD, SUMMIT, N. J.

Send catalog, describing Carver Laboratory Press and Standard Accessories.

NAME .....
FIRM .....
ADDRESS 69

For more facts, use coupon or circle No. 501

ROCKFORD



DUAL DRIVE CLUTCH

Simplified Power Division

Between PTO and Vehicle Drives

This is a foot-controlled, spring-loaded clutch of rugged construction. It drives both the vehicle transmission shaft and the power take-off shaft. Power is transmitted to the power take-off by a hollow shaft, driven by a splined hub in the clutch cover plate. This hollow shaft operates at all times the engine is running. The vehicle transmission shaft operates inside the hollow shaft. This Dual-Drive design results in dependable control and transmission of full engine power to vehicle driving-wheels and power take-off.

Small Spring Loaded

Heavy Duty Spring Loaded

Oil or Dry Multiple Disc

Heavy Duty Over Center

Power Take-Offs

Speed Reducers

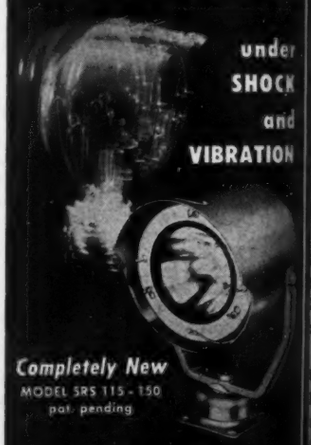
SEND FOR THIS HANDY BULLETIN
Gives dimensions, capacity tables and complete specifications. Suggests typical applications.

ROCKFORD Clutch Division BORG-WARNER
314 Catherine St., Rockford, Ill., U.S.A.
Export Sales Borg-Warner International — 36 So. Wabash, Chicago 3, Ill.

CLUTCHES

For more facts, use Request Card at page 18 and circle No. 502

NEVER BEFORE A LIGHT THAT LASTS SO LONG



Completely New
MODEL SRS 115 - 150
pat. pending

Super Rough Service
STURDILITE®
FLOODLIGHT

A radically new concept in heavy duty lighting

★ Free-floating, Diaphragm-action Lamp Suspension at the lens end!
★ Multi-plane Resilient Base Mount
★ Synchro-Harmonic Filament-Fixture Positioning for low, low relamping cost
★ Integrated Socket-clamp. Eliminates screw-socket problems.

In hundreds of scientific laboratory tests, the combination of revolutionary new components and lamp in Model SRS 115-150 averaged 6000 times longer lamp life than former floodlights. From a few days to months in field tests—that's the amazing record of extended lamp life of this STURDILITE over conventional lights.

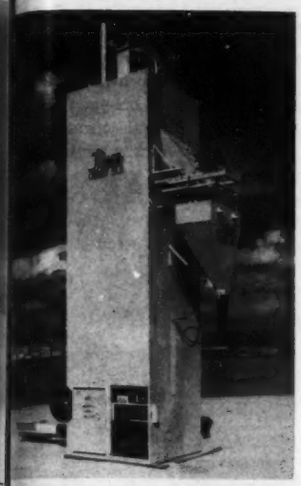
MERRITT-CHAPMAN & SCOTT
uses STURDILITES on the
3 BIGGEST CONSTRUCTION JOBS
IN AMERICA TODAY

Glen Canyon Dam, Arizona	Niagara Power Project, N.Y.	Priest Rapids Dam, Washington

High and low voltage models for all requirements in heavy construction, mining, quarrying, etc. Write for Literature.

PHOENIX PRODUCTS COMPANY
4727 N. 27th Street Milwaukee 9, Wis.

For more facts, circle No. 503



ortable batching plant as 350-bbl. capacity

The Ross Porta-Plant Co. announces the Model 350-B bucket-elevator-type independent bulk-cement batching plant.

The new plant is a highly portable compact unit with a 350-barrel capacity, and is adaptable to any situation where bulk cement is desired.

Designed for legal highway travel, it can be moved by any fifth-wheel truck with ease. Upon arrival at the job site, the maneuverable unit can be raised into operating position with a minimum of effort, according to the manufacturer.

Featured in the design is a self-placing cement hopper that falls into position as the machine is set up. During transportation, the hopper rides atop the bulk plant.

For further information write to the Ross Porta-Plant Co., Dept. C&E, P. O. Box 446, Brownwood, Texas, or use the Request Card at page 18. Circle No. 91.

Two increased power capabilities are featured in the new Caterpillar D7 Series D tractor. The unit's turbocharged engine is rated at 140 flywheel horsepower, an increase of more than 9 per cent over the 128 rating of its predecessor. Additionally, the new crawler is said to deliver 80 per cent more lugging ability than the previous D7. Lifetime-lubricated rollers, dry-type air cleaner, and power-train refinements are other improvements. For further information write to the **Caterpillar Tractor Co.**, Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 165.

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR: PILE TESTING • UNDER-PINNING • BRIDGES • PIPE PUSHING •

DESIGNERS and MANUFACTURERS OF

Hydraulic Units For Special Applications

RICHARD DUDGEON INC. EST. 1850

789 BERGEN STREET BROOKLYN, N. Y.

• ST 9-4040 •

For more facts, circle No. 504

Announcing Two NEW Lines

for Lincoln Lubrovans* and Lubmobiles*

Truck-Mounted Lubrication Departments

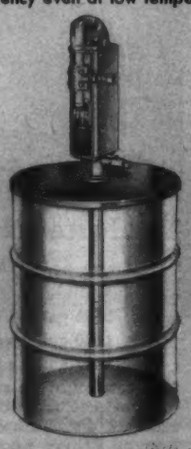
For On-The-Job Servicing of Construction Equipment

A Complete Line of

POWERMASTER PUMPS

Air Motor Operated

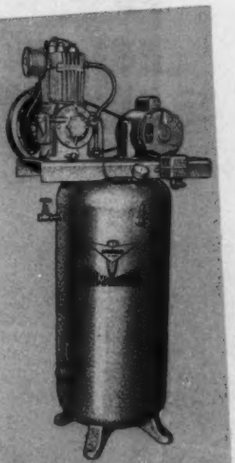
Four air motors, completely interchangeable with pump tubes. Can handle materials from light oils to heavy fibrous greases and viscous coatings, sealers and mastics. Air motor 100% pneumatic. Air valve is stall-proof, leak-proof and pre-lubricated. Entire pump sturdily constructed of tough, durable steel. Easy to maintain and disassemble. Pumps operate at uniform high efficiency even at low temperatures.

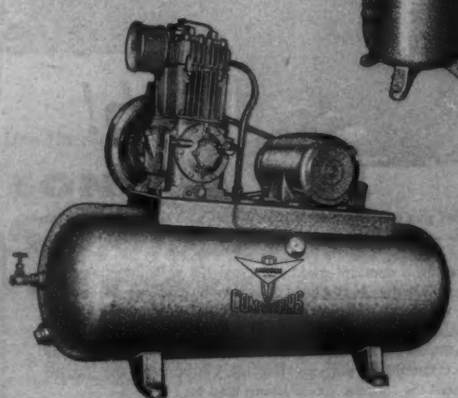


A Complete Line of

AIR COMPRESSORS

More than 200 models—reciprocating type—¼ h.p. to 20 h.p. —electric or gasoline driven. Horizontal or vertical tanks—automatic start and stop or continuous service operation. Loadless starting—compressor doesn't pump until motor has reached full speed. Sound engineering and durable construction assure long service life, minimum maintenance.





NEW . . . Catalogs on Lincoln Lubrovans and Lubmobiles

Complete information on these "lube stations on wheels" which bring lubrication facilities right to your jobsite. Catalog 32 describes entire range of components for Lubrovans and Lubmobiles. Engineering Manual 33 provides technical information on designing and assembling custom-planned portable rigs from Lincoln equipment.

For complete information on Lincoln Lubrication for Construction Equipment, send this coupon today for Catalogs 32 and 33, and Bulletin A-110.

*Trade Name Registered

LINCOLN ENGINEERING COMPANY

Division of The McNeil Machine & Engineering Co.

4010 GOODFELLOW BLVD. • ST. LOUIS 20, MO.

LINCOLN ENGINEERING CO.
5702-A Natural Bridge Ave., St. Louis 20, Mo.

Please send me Catalogs 32 and 33, and Bulletin A-110.

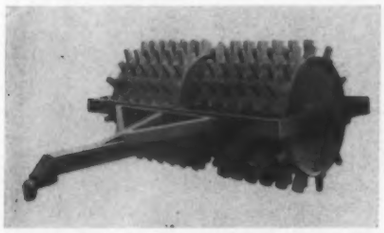
Name.....

Company.....

Address.....

City.....Zone.....State.....

For more facts, use coupon or Request Card at page 18 and circle No. 505



On the Ko-Cal Model 170 tamping roller, each drum is mounted in Timken bearings and is attached to an oscillating subframe.

New tamping roller gives fast compaction

A new tamping roller, the Model 170, is offered by the Koehring California Co.

The tamping feet of the new roller are shaped to penetrate and withdraw from loose fill with a minimum of disturbance of the fill material, and to clean readily when working in sticky material. This feature reduces drawbar pull, resulting in faster compaction, the manufacturer states.

Each of the two roller drums of the Ko-Cal Model 170 has 20 rows of tamping feet, 6 per row, or a combined total of 240 feet on both rolls. Pressure on tamping feet when drums are empty is 207 psi; when drums are 75 per cent filled with water, 298 psi; and with drums 75 per cent filled with sand and water, 373 psi.

Drums when empty weigh 17,150 pounds; with water, 24,650 pounds; and with sand and water, 30,680 pounds. Over-all working width of the drums is 11 feet 1 inch. The entire unit can be dismantled for transportation by removing only 16 bolts.

The roller is also available as the Model 170-A with hollow, nondirectional feet for shuttle operation.

For further information write to the Koehring California Co., division of Koehring Co., Dept. C&E, 2200 Country Club Blvd., Stockton 4, Calif., or use the Request Card at page 18. Circle No. 83.

New masonry anchor drills its own hole

Fastening fixtures to concrete is said to be speeded and simplified by a combination masonry drill-anchor offered by The Rawlplug Co., Inc. Called Saber-Tooth, the new anchor drills its own hole, then is driven into it to form an anchorage with holding power up to 17,860 pounds.

Holes are drilled quickly, even in hard concrete, by the drill-anchor's core action.

These units may be used with power-operated or hand hammers. When the hole has been drilled, a steel expander plug is placed in the drill end and the anchor driven home. The anchor expands over the plug at the bottom of the hole.

For further information write to The Rawlplug Co., Inc., Dept. CAE, 248 Petersville Road, New Rochelle, N. Y., or use the Request Card at page 18. Circle No. 69.

All-Purpose
MAGINNISS CONCRETE VIBRATORS

Cut costs on every job!

Whether you're using plastic or stiff mixes, Maginnis Hi-lectric Vibrators will place concrete faster and produce blemish-free finished surfaces.

Powered by a constant-speed 180 cycle 120 volt induction type motor located in the vibrator head for maximum efficiency, Hi-lectrics produce variable frequencies up to 10,500 V P M and maintain constant speed at all times—they do not slow down and lose vibrating effectiveness even under full load in stiffest low-slump concrete! This means you can use all purpose Hi-lectric Vibrators on any job, no matter what the concrete specifications may be.

Because pours are completed faster, labor expense for the entire crew is reduced. One-man operation cuts vibrating costs, too. The Hi-lectric power unit can be located as much as 200 ft. away from the work site—the vibrator operator is free to move about on the forms unhampered by cumbersome, unwieldy flexible shafts. What's more, with blemish-free surfaces, costly hand finishing is eliminated.

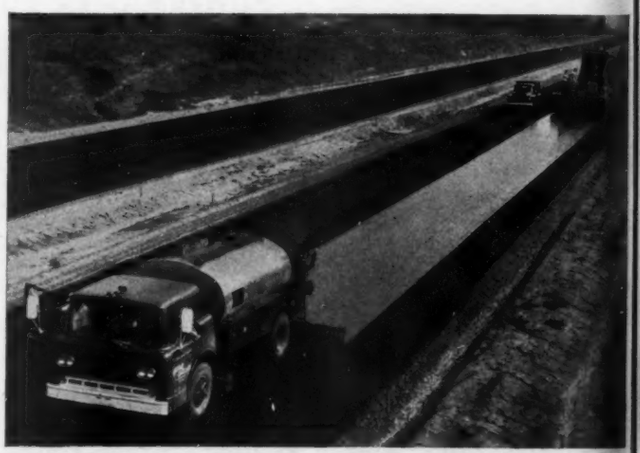
Ask your Maginniss distributor to demonstrate on your present job—he'll show you how Hi-lectric equipment can cut your concrete placing costs. You'll find him listed in the Classified Section of your telephone directory. AA-1826

Simple, rugged construction of Hi-lectric motor-in-head vibrators keeps maintenance costs at a minimum. There are no brushes, commutators or armature windings to burn out.

Maginniss HI-LECTRIC POWER TOOLS

MAGINNISS
POWER TOOL COMPANY
For literature write Dept. CE-69
154 DISTL AVENUE • MANSFIELD, OHIO

For more facts, use Request Card at page 18 and circle No. 506



Designed for maximum payload
...the new Etnyre model FX-500!

Talk about payload! Compare these Etnyre capacities to *your* state load limits: 1550 gallons for single 18,000# axle
1690 gallons for single 20,000# axle
1840 gallons for single 22,400# axle

You can count on similar greater maximums on semi-trailer single and tandem axle mountings too! And dependable operation, and uniform, accurate distribution are always typical of the results you can expect from an Etnyre. Look at the sharp, clean edges and the even distribution in the above photo of an Etnyre FX-500 and you can see the results of Etnyre's exclusive triple-lap coverage.

OTHER FX-500 QUALITY FEATURES:

• Hardened aluminum jacketing over 2" Fiberglas insulation which is reinforced with molded asbestos blocks • Stainless steel jacket near burners and exhaust stacks • Stainless steel heat jacket for pump • Aluminum fenders and mud flaps.

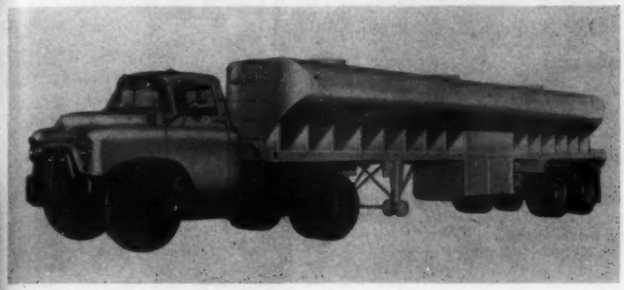
You're familiar with Etnyre's accuracy and dependability . . . now you can get maximum payload too . . . for maximum profit. Investigate today — find out how a "Black-Topper" can handle more work . . . faster . . . better . . . more economically.

SEE YOUR ETNYRE DEALER

ETNYRE
"Black-Topper"
BITUMINOUS DISTRIBUTORS

For more facts, use Request Card at page 18 and circle No. 507

To obtain further information on any of the products described in this section, circle the number given at the end of the item on the handy Request Card that is bound in at page 18 of this issue.



The Baughman bulk body is custom-built to specifications of height, weight, length, and capacity.

Bulk-cement transporter has combination discharge

The Baughman Mfg. Co. offers a new bulk transport body for carrying cement and other free-flowing materials.

A feature of the body is its combination air-mechanical discharge system, which permits the user to select either a combination of air-mechanical or straight mechanical discharge. The Model SST-11P air-mechanical discharge elevates cement up to 100 feet at a rate of ¾ ton per minute; the straight mechanical discharge unloads into pit or conveyor at an approximate rate of 1 ton per minute.

For further information write to the Baughman Mfg. Co., Dept. C&E, 192 Arch St., Jerseyville, Ill., or use the Request Card at page 18. Circle No. 114.

Paving-breaker muffler cuts noise 55 per cent

A muffler cover for paving breakers, made up of two jackets heavily lined with soundproofing materials, is available for Thor, Ingersoll-Rand, Joy, Gardner-Denver, and Chicago Pneumatic tools.

The muffler is said to cut noise 55 per cent or more and, according to the manufacturer, it can be installed in seconds.

For further information write to the W. A. Plummer Mfg. Co., Dept. C&E, 752 S. San Pedro, Los Angeles 14, Calif., or use the Request Card at page 18. Circle No. 108.

Tying Re-Bars?

Save wire . . . save time . . . increase production with IDEAL Tie Wire Reels!

Whether your job calls for tying and placing one ton of re-bars or 14,000, Ideal Tie Wire Reels are the fastest, low-cost way to big new savings and more productivity! On every job, big or little, Ideal Tie Wire Reels will permit *6 to 8 more ties per man per minute* . . . save up to 33% in tie wire . . . assure greater worker safety.

on your very next re-bar job . . . for speed . . . for efficiency . . . for safety . . . *for new profits.* See for yourself how wire tying has finally come of age—why any other tying system is now old-fashioned. Available locally through more than 100 stocking distributors, coast to coast.

Mail coupon for more facts.

Try Ideal Tie Wire Reels

IDEAL TIE WIRE REELS

Ideal Reel Company
1624 Madison Street
Paducah, Kentucky

Please send me facts on Ideal Tie Wire Reels, and address of nearest dealer.

Name_____

Company_____

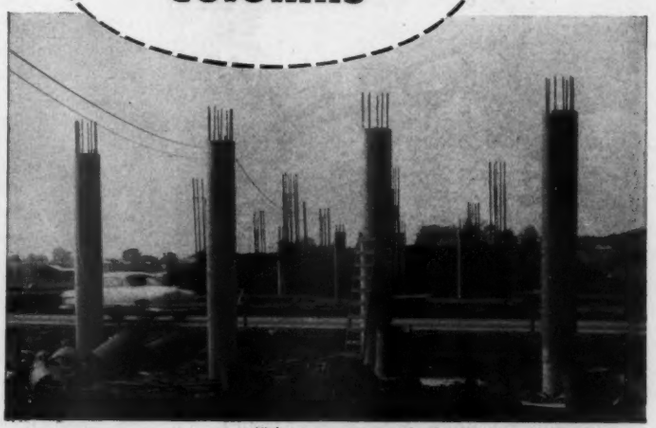
Address_____

City_____ Zone____ State____

IDEAL REEL COMPANY, PADUCAH, KENTUCKY

For more facts, use coupon or Request Card at page 18 and circle No. 508

Fibre Forms Cut Costs of Round Concrete Columns



Highway overpass on U.S. 50, Johnson County, Kansas. Designer: Kansas State Highway Commission. Contractor: Swenson Construction Company.

Use time-saving, money-saving

SONOCO
Sonotube.
FIBRE FORMS

Because they are lightweight, easy to handle and place, strip quicker, and require only minimum bracing, Sonoco SONOTUBE Fibre Forms save time, labor and money—provide the fastest, most economical means of forming round columns of concrete.

The overpass piers shown above are 20 feet high, and were formed with 30" and 36" I.D. SONOTUBE Fibre Forms.

For buildings, bridges, overpasses, schools, churches—in fact, whenever round concrete columns are specified—use SONOTUBE Fibre Forms. Approved by architects and engineers and used successfully by contractors everywhere, there's no better way to cut costs!

Choose from 3 types: Seamless (premium form for finished columns); "A" Coated (standard form for exposed columns); or "W" Coated (for unexposed columns).

Order Sonoco SONOTUBE Fibre Forms in required lengths or standard 18' shipping lengths . . . sizes available from 2" to 48" I.D.

See our Catalog in Sweet's

For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

3686

SONOCO
Construction Products
SONOCO PRODUCTS COMPANY

For more facts, use Request Card at page 18 and circle No. 509

New off-the-road hauler available in three models

The new Haulpak off-the-road hauler is announced by the LeTourneau-Westinghouse Co.

The truck is available in three sizes: 27-ton and 32-ton end-dump models, and an 80-ton bottom-dump. Included among design features is the elimination of springs through the use of four big pistons acting like giant shock absorbers. Conventional axles also have been eliminated, and there are no tie rods or exposed steering linkage. The entire steering system is protected within or above the frame line.

A 130-inch wheelbase makes the Haulpak an exceptionally maneuverable machine.

The 27-ton model is powered by a Cummins 335-hp turbocharged engine and operates at speeds up to 35.4 mph. With a Cummins 375-hp turbocharged engine, the 32-ton model has speeds up to 38.8 mph. The 80-ton Haulpak bottom-dump is powered by a Cummins V-12 450-hp engine and operates at speeds up to 40 mph.

For further information write to the LeTourneau-Westinghouse Co., Dept. C&E, 2301 N. Adams St., Peoria, Ill., or use the Request Card at page 18. Circle No. 63.

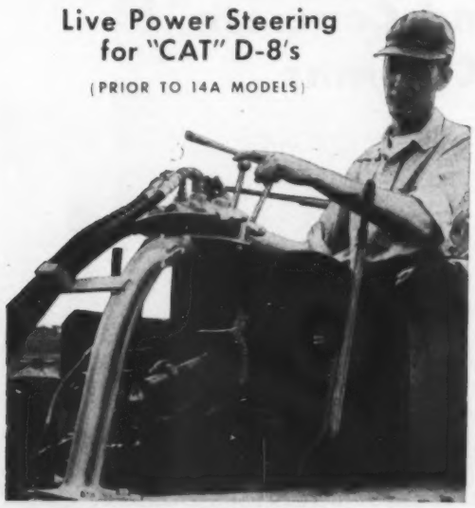
Available in three sizes—27, 32, and 80-ton—the Haulpak features air suspension, low center of gravity, and fast travel speeds.

NEW! LOW COST!

Rivinius

Live Power Steering for "CAT" D-8's

(PRIOR TO 14A MODELS)



TIME-SAVER: Operators report they can operate D8's one, sometimes two speeds faster with hydraulic, fingertip control Rivinius Live Power Steering. Levers move only 1½"; return automatically when released.

MAN-SAVER: Operator fatigue goes down...performance goes up! Rivinius Live Power Steering provides closer, faster control of D8 power and maneuverability.

CLUTCH-SAVER: On each turn, the D8's clutches are engaged smoothly into complete seizure...engagement and disengagement is positive for no wasteful slippage and clutch wear.

DOLLAR-SAVER: This new Rivinius system is compact, easy to install on D8's in the field...consists of hydraulic cylinder, valve, pump, reservoir, hoses, brackets and hardware.

SEE YOUR CATERPILLAR DEALER NOW OR WRITE

Rivinius, inc.

EUREKA, ILLINOIS

FOR "CATERPILLAR" MOTOR GRADERS: Torque Steering Booster ...Hydraulic Moldboard Shift...Snow Blower...Snow Loader

FOR "CATERPILLAR" D8 TRACTORS: Live Power Steering

For more facts, circle No..510

For further information on any product described in this section, circle the indicated number on the Request Card at page 18.

Heavy-duty vibrator cuts hopper-car unloading time

The new Navco HCP line of heavy-duty air vibrators for unloading covered railroad hopper cars is announced by the National Air Vibrator Co.

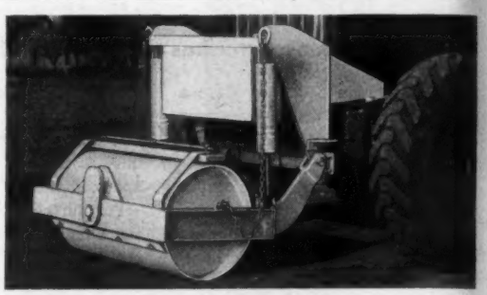
The vibrators are designed with an exceptionally long piston stroke for maximum amplitude and thrust, and the piston is the only moving part. Units have a stainless-steel mounting head for long life; there are no body assembly bolts to wear out or fatigue.

Two models are available. The 3-inch-piston size is 14¼ inches long, weighs 68 pounds, and consumes 18 cfm at a recommended air pressure of 40 to 60 psi. The 4-inch-piston size is 17½ inches long, weighs 115 pounds, and uses 29 cfm at the same recommended air pressure.

A hydraulic clamp assembly is also available for attaching to cars not equipped with standard dovetail brackets.

For further information write to the National Air Vibrator Co., Dept. C&E, 435 Literary Ave., Cleveland 13, Ohio, or use the Request Card that is bound in at page 18 of this issue. Circle No. 22.

The Navco units are said to cut unloading time on covered hopper cars, eliminate clean-out of cars after emptying, and free personnel for other work.



MARTIN

GRADERROLLER

for all types of surface rolling

SAVE TIME—quickly attached to any Cat Motor Grader. Easily, instantly lowered and raised as needed. No need for an extra machine and man . . . GraderrolleR is always on the job.

SAVE MONEY—costs much less than conventional roller. No maintenance problems. Get more use out of grader, too!

TILTABLE, TOO! Tiltable design and hydraulic accumulator allow roller to stay level while maintaining constant controlled pressure, regardless of position of grader. Automatic sprinkling system keeps asphalt from sticking to roller.

progress through Research • Design • Engineering

MARTIN COMPANY

820 ANDREWS AVE. • KEWANEE, ILLINOIS

For more facts, circle No. 511

CONTRACTORS TRUCK CRANE

the **HIAB 170**

one man operated — fully hydraulic

Here's a versatile, fully hydraulic, one-man operated truck crane that's an ideal contractors' utility tool. The HIAB 170 offers a range of lifting capacities from 6,000 lbs. on the shortened boom of 5' to 2500 lbs. on a full boom of 13'. The boom length is easily adjustable through hydraulic control.

Ideal for general maintenance work, the HIAB 170 will lift up to 20' above ground level at a maximum speed of 20" per second. Control is from either side of the truck cab. Crane action is positive and accurate. 200° or 360° swing arc. When not in use, the HIAB 170 folds snugly behind the cab, taking only 15" of space. This leaves the entire truck bed open for load. Hydraulic outriggers to handle heavy loads are standard equipment.

WRITE FOR THE NAME OF YOUR NEAREST DEALER

Stanco — WEST COAST SALES INC. — 1400 North St. (Corner of Olympic & North) Santa Monica, California

Stanco — MIDWEST SALES INC. — P. O. BOX 757 Chicago 42, Illinois

For more facts, circle No. 512

Coring machine features automatic hydraulic feed

The new Mark IV diamond coring machine, available from Mobile Drill, features automatic hydraulic feed and drills holes up to 8 inches in diameter in all types of masonry and reinforced concrete.

According to the manufacturer, Mark IV Hydro-Cushion control automatically maintains the correct drilling pressure and correct rate of feed, and automatically compensates for variations in hardness in the material being drilled. Hydraulic feed keeps the bit firmly "on bottom" to prevent diamond polishing and ensure maximum drilling speed.

Other Mark IV features include: one-piece motor and water-swivel design for more rigid coupling between motor and bit; specially built continuous-duty motors with shear pins for positive overload protection; demountable drill head and control-panel assembly that permits remote operation high up on a wall or in tight places; and a choice of two horizontal mounting methods.

For further information write to Mobile Drill, Inc., Dept. C&E, 960 N. Pennsylvania, Indianapolis, Ind., or use the Request Card at page 18. Circle No. 17.

Bits and couplings for blast-hole drilling

Brunner & Lay offers a complete new line of rope-thread carbide Rok-Bits; Carbo-Rok sectional rods; couplings and striking bars.

The easily uncoupled rope-thread Rok-Bits come in 2½, 2¾, 3, 3½, and 4-inch bit sizes with 1½-inch rope thread; 3, 3½, and 4-inch, with 1¾-inch rope thread; and 4, 4½, and 5-inch, with 2-inch rope thread. All are available in both cross and "X" design with a new heavy-duty cut-away body.

The Carbo-Rok sectional rods are available with rope threads on 1¼-inch hex, 1½-inch hex, 1½-inch round, 1¾-inch round and 2-inch round steel.

For further information write to Brunner & Lay, Inc., Dept. C&E, 9300 W. King St., Franklin Park, Ill., or use the Request Card at page 18. Circle No. 19.

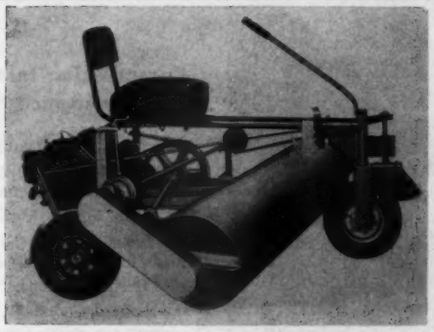
Offer new power broom for highway sweeping

The Ken Roll power broom is available from the Pfahler Mfg. Co.

This broom features all-steel welded construction; closed differential; left-foot-operated clutch and right-foot-operated brake; glass-sealed ball bearings.

Broom segments are easily replaced, and the broom height is regulated by a special adjustment next to the operator's seat for maximum economy of operation when traveling.

For further information write to the Pfahler Mfg. Co., Dept. C&E, Galion, Ohio, or use the Request Card at page 18. Circle No. 43.



On the Ken Roll power broom, broom segments are easy to replace, and broom height is regulated by a special adjustment next to the operator's seat for maximum economy of operation when traveling.

WORLD'S LEADING LINE OF QUALITY DUMP AND TRAILER BODIES

ANTHONY DUMP BODIES

Extra legal payload with Anthony Frameless Dump Trailers!

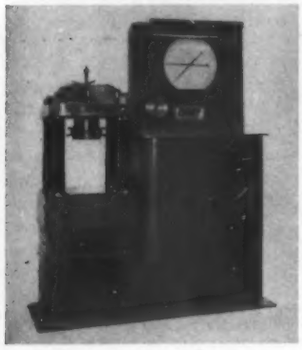
Here's your answer to moving more material faster and at lower cost! Anthony's Frameless Dump Trucks eliminate conventional trailer frame. Exclusive high-speed Teleramic Hoist weighs less than conventional lifts – weight is better distributed. Low initial cost – low trailer weight – up to 4,000 lb. more legal payload than conventional tandem axle dump truck. No heavy cables, winches or lift arms. Built to Anthony's highest-of-all quality standards. Two and four wheel dump trailers available. Capacities from 8 yds. up to any greater size required. See your Anthony distributor for the best size Anthony unit . . . engineered to your state transportation laws as well as your truck and hauling requirements. Anthony Company, Streator, Illinois.

Another example of Anthony leadership: World's largest honing machine, specially built for Anthony, produces highest quality precision cylinders.

ANTHONY

DUMP BODIES AND HOISTS · DUMP TRAILERS · LIFT GATE · TRUCK-CRANE

For more facts, use Request Card at page 18 and circle No. 513



Compression testing unit is large-capacity machine

Designed specifically for use in laboratories having a steady work load of routine concrete compression tests, the Forney Model LT-701 is a 350,000-pound-capacity compression machine conforming to all current ASTM specifications.

Standard equipment includes complete upper platen assemblies for cylinders and blocks; a 16-inch-diameter load indicator; automatic limit switch; illuminated instrument panel and work table; a built-in monitor gage for checking the load indicator; and a hardened wear plate to protect the lower platen.

For future information write to Forney's Inc., Tester Division, Dept. C&E, Box 310, New Castle, Pa., or use the Request Card at page 18. Circle No. 54.

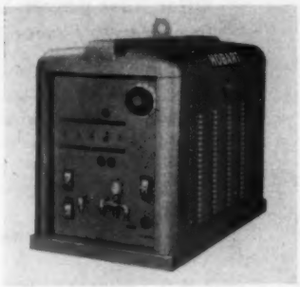
Compact welding package handles remote operations

Complete, portable tungsten-inert-gas shielded arc-welding facilities are available in one compact, lightweight package from Hobart Bros. Co.

Named Tigpak, the unit is designed to eliminate the need for moving heavy arc-welding equipment and extending water lines for remote welding jobs. It may be easily carried, hoisted, or trundled to the job, states the manufacturer.

The Tigpak unit contains all the essential accessories, including high frequency for both stabilization and initiation of the arc, circulating-water cooling system with own water supply, magnetic gas valve, welding circuit contractor, and controls.

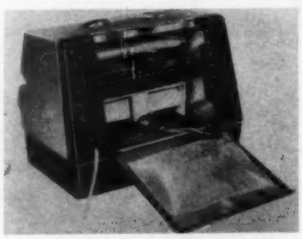
Designed for welding in remote locations, the unit measures 38 inches long, 2¼ inches wide, and 31¾ inches high. Weight without water is 180 pounds.



For further information write to the Hobart Bros. Co., Dept. C&E, Hobart Square, Troy, Ohio, or use the Request Card at page 18. Circle No. 155.

Processing fluid sealed in new photocopier

An automatic single-unit photocopier, equipped with a sealed processing-fluid supply, is announced by F. G. Ludwig, Inc.



Called the Contouramatic Mark II, the machine is said to provide the advantages of a true photographic process, yet is so designed that the fingers of the operator need never touch fluid. This is the result of the company's Seal-Pak system, which employs convenient disposable sealed vinyl bags for the processing fluid.

According to the manufacturer, the machine combines high-speed exposure and processing with maximum versatility in copying ability. It reproduces any mark made by black or colored pencils, regular or ballpoint pens, stencils, rubber stamps, spirit duplicators, chalk, crayons or grease pencils, as well as typing and fine printing. The photocopier makes black and white copies up to 9 inches wide.

For further information write to F. G. Ludwig, Inc., Dept. C&E, 151 Coulter Place, Old Saybrook, Conn., or use the Request Card at page 18. Circle No. 4.

Can't be beat for SAFETY... SPEED... ECONOMY

BIL-JAX

BIL-JAX SCAFFOLDS AND MATERIAL HOISTING TOWERS

RENT OR BUY — EITHER WAY, THEY PAY FOR THEMSELVES

Rolling and Stationary Scaffolds

On any job ... large or small ... Bil-Jax has the right scaffold or hoisting tower to get the maximum in efficiency from your men and profit from the job. Other equipment includes putlogs, metal stages and catwalks, shoring jacks, work platforms, swing scaffolds.

Sales and rental outlets throughout U. S. and Canada. Write for catalog.

BIL-JAX INC. Archbold, Ohio

For more facts, circle No. 514

NEW! SAF-T-KLENZ MASONRY CLEANER

Replaces Muriatic Acid!

A dry acid for safer removal of excess mortar and lime stains. Will not harm or discolor

BRICK · STONE · TILE · GLASS · MORTAR JOINTS ALUMINUM OR STAINLESS STEEL

DEALERS! Write regarding open territory.

Will dissolve encrusted mortar from tools. Easier to handle. No harmful fumes. Economical. Eliminates carboy deposit and breakage.

BERMAN CHEMICAL COMPANY
1928 North 12th Street Toledo 2, Ohio

For more facts, use Request Card at page 18 and circle No. 515

Going In The HOLE?

You can do this economically with a HAWKEYE portable elevator

Whether you are in the hole or up in the air with your job, the Hawkeye Elevator eliminates "ladder time" economically. Completely portable the Hawkeye Elevator may be dismantled and re-erected in a new location, in a few hours. Entire operation can be made by your maintenance crew.

Valuable sales territories still available, for further information write to

HAWKEYE PRODUCTS CORP.
1013 So. State St.
Syracuse, New York

For more facts, circle No. 516

Product LITERATURE

To obtain free copies of any of the literature described in the following section, circle the designated number on the Request Card at page 18.

Tarpaulins—a catalog describing and illustrating the complete line of Vultex, Shuredry, and Fulton tarpaulins. Catalog No. 159.

Write to Canvas Division, Fulton Cotton Mills, Dept. C&E, P. O. Box 1126, Atlanta 1, Ga., or use the Request Card at page 18. Circle No. 124.

Batching plant—literature on the new Heltzel "unitized" combination batching plant. Describes how the plant goes together in 8 simple steps, requiring but 2 or 3 hours to set up the entire batching unit. Traveling batch chute that converts plant from ready-mix to dry-batch also described.

Write to The Heltzel Steel Form & Iron Co., Dept. C&E, Warren, Ohio, or use the Request Card at page 18. Circle No. 159.

Skid-shovel—a booklet on the International Drott TD-15 4-in-1 skid-shovel. Includes numerous on-the-job photographs, and gives data on such attachments as grubber blades, rock forks, special buckets, scarifiers, bulldozers, bullangledozers, and others. Catalog CR-600-1.

Write to the International Harvester Co., Dept. C&E, 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 152.

Estimating tool—literature describing the Excav-Aide, a tool for estimating, quickly and accurately, site cut and fill and other excavation quantities. According to the literature, this device gives answers directly in cubic yards without complicated arithmetic.

Write to The Estim-Aide Co., Dept. C&E, P. O. Box 476, Rockland, Mass., or use the Request Card at page 18. Circle No. 116.

Flotation tires—a 64-page catalog describing Harmo flotation tires for all types of off-the-road vehicles. Matching tubes, wheels, rims, and stub axles also shown. Photographs illustrate text.

Write to the Harmo Tire & Rubber Corp., Dept. C&E, 1050 18th St., Detroit 16, Mich., or use the Request Card at page 18. Circle No. 126.

Trenchers—a folder on Cleveland Models J-20, J-30, and J-40 trenchers. Provides a quick, convenient comparison of the digging capacities, specifications, and dimensions of the

Specify POSEY *Dependable* STEEL PLATE FABRICATION

IROQUOIS ASPHALT PLANTS

Custom Designed . . . For Hot Or Cold Mixes

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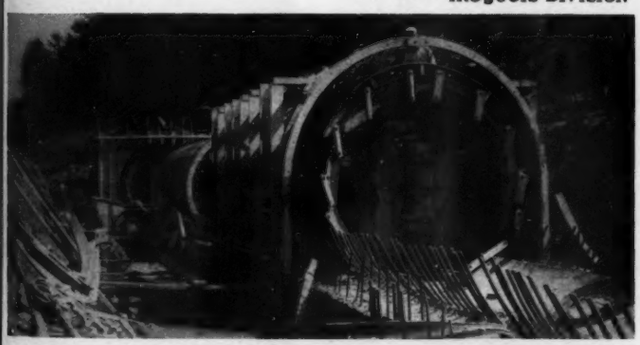

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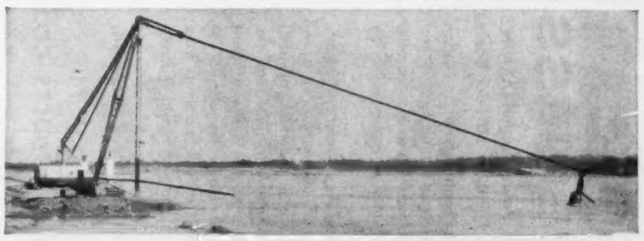
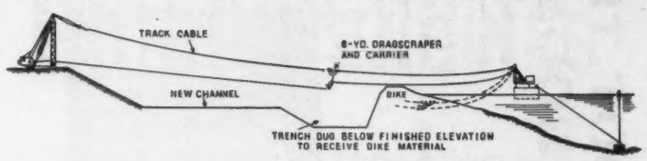
For more facts, use Request Card at page 18 and circle No. 517



Eight-Yd. Sauerman DragScraper Cuts Seaway Dike Removal Costs

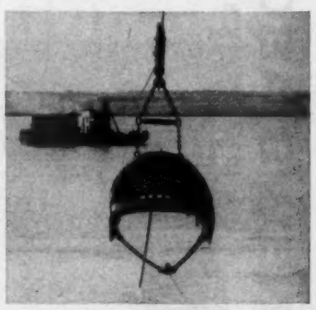


Atlas Construction Co. Ltd., Montreal, Que., had the job of enlarging the St. Lawrence Seaway channel near Iroquois, Ont. An 8-yd. Sauerman Crescent DragScraper and four-wheeled carrier was used with a crane to remove the perimeter dikes composed of tough digging glacial till and to backfill the trenches.

The hoisting line of the crane, used as a track cable for the Crescent and carrier, ran through a block on the boom tip to a 25-ft. tail tower mounted on a 20 x 40-ft. barge. The structural steel spud mast used to support the boom was pin-connected to facilitate movement of the crane.

After inhauling to the trench, the 8-yd. Crescent was gravity-returned part of the way to the excavation. A single-drum hoist mounted on the barge tail tower controlled the backhaul cable used to complete the return cycle. The job was handled by two operators, one on the crane and the other on the barge. The operating span varied from 600 to 900 ft. Average DragScraper hauls were 300 to 600 ft.

This is a typical example of how a crane can handle a Crescent DragScraper of greater capacity than the original dragline bucket or clamshell. Larger machines can usually double their capacity with a DragScraper. Smaller units can handle about 50% more. Machine range is limited only by the spooling capacity of the hoist drums. It can reach farther, dig deeper under water and take material out of soft areas without the nuisance of mats and the hazard of undermining the crane.



DragScraper traveling down track cable on return to underwater dike. Barge is in background.

When the boom is supported by a strut, a DragScraper of still greater capacity can be used. The strut increases overturning resistance and allows a greater load to be imposed. Crescents used in conjunction with such supports increase the rated capacity as much as 4 to 1.

Many operators consider the Crescent DragScraper as standard auxiliary equipment. The DragScraper permits bidding on and getting those premium jobs that could not be handled without considerably more time and expense by other means.

Find out how much you can increase your crane's capacity. Write or call giving the make, model number and boom length of your machine. Field Report 228 and Catalog J gives more information on DragScraper operations with cranes.

SAUERMAN BROS., INC. 624 SO. 28th AVE. BELLWOOD, ILL.

Linden 4-4892 • Cable CABEX—Bellwood, Illinois

50th Anniversary Year

Crescent DragScrapers • Slackline and Tautline Cableways • Durolite Blocks

For more facts, use Request Card at page 18 and circle No. 518

three machines. Action photos illustrate text. Bulletin L-104.

Write to The Cleveland Trencher Co., Dept. C&E, 20100 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 106.

Tunnel liner plates—a manual describing tunneling practices with Armco liner plates. Discusses different applications; gives engineering data; illustrated with tables, graphs, and typical installations. Manual TL-7858.

Write to Armco Drainage & Metal Products, Inc., Dept. C&E, 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 10.

Diesel engine—a folder describing the operating and mechanical benefits of the Allis-Chalmers Model 21000 engine as the power plant for its HD-21 turbocharged diesel crawler-tractor. Illustrations include a cutaway photograph. Specifications given. Folder MS-1328.

Write to the Construction Machinery Division, Allis-Chalmers Mfg. Co., Dept. C&E, P. O. Box 512, Milwaukee, Wis., or use the Request Card at page 18. Circle No. 78.

Anchor drills—a catalog on Star Selfdril shields. Gives complete installation data for setting by hand or with air or electric impact hammers. Application drawings and descriptions. Specifications.

Write to Star Expansion Industries Corp., Dept. C&E, Mountainville, N. Y., or use the Request Card at page 18. Circle No. 77.

Lubricant pumps—a catalog describing the Lincoln line of air-motor-operated lubricant pumps. Covers design and engineering features for the complete series of the firm's 67 new Power-Master pumps and allied equipment. Complete with lubricant output-performance and selection charts. Catalog No. 32.

Write to the Lincoln Engineering Co., Dept. C&E, 4010 Goodfellow Blvd., St. Louis 20, Mo., or use the Request Card at page 18. Circle No. 176.

Rubber waterstop—literature on a rubber waterstop called Aquastop. Discusses tensile strength, flexibility, and elasticity. Also includes information on field-splicing (such molded accessories as tees, unions, crosses, and L's are shown), as well as standard specification data covering materials, installation requirements, sampling, and testing.

Write to the Presstite Division, American-Marietta Co., Dept. C&E, 39th and Chouteau Ave., St. Louis 10, Mo., or use the Request Card that is bound in at page 18. Circle No. 11.

Masonry drilling equipment—information on Sprague & Henwood diamond bits, water swivels, adapters, and a variety of other drilling equipment. According to the literature, these bits are available in several types, and in sizes ranging from ¾ inch to 14 inches OD.

Write to Sprague & Henwood, Inc., Dept. C&E, 221 W. Olive, Scranton 2, Pa., or use the Request Card at page 18. Circle No. 148.

Tractors; tractor units—a booklet covering the Eimco 105 series of tractors and tractor units. Includes pictures of the Model 105 tractor-dozer, excavator, and excavator-dozer combination; also, the Model 12[illegible] front-end loader. Gives specifications for each. Booklet L-1074.

Write to The Eimco Corp., Dept. C&E, P. O. Box 300, Salt Lake City 10, Utah, or use the Request Card at page 18. Circle No. 104.

NEWS ABOUT THE DUMP BODY BUSINESS

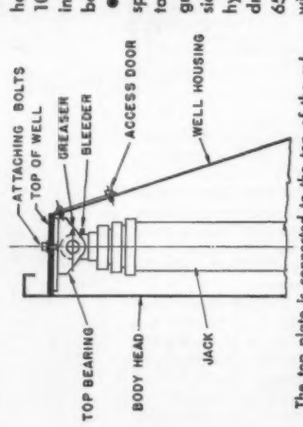
Increase Your Earning Power with MARION'S New Front End Hoist For 8, 9, 10 Foot Bodies

Another rugged and competitively priced Marion hoist is now available in three models for 8, 9 and 10-foot bodies. Outstanding features incorporated in the hoist provide time and performance saving benefits for all users.

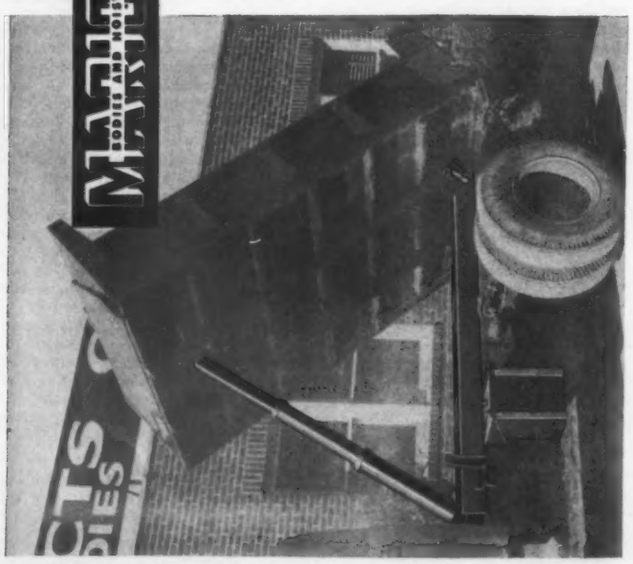
● The method of attaching the cylinder to the body speeds up installation and allows fast, easy detachment for any servicing in the field (see diagram). ● The deep oil reservoir, mounted on the side, provides a quieter, cooler, more efficient hydraulic system and eliminates the danger of drawing air into the system ● Weight savings from 65 to 270 pounds ● Fast dumping speed ● Pump with safety relief valve.

Write for a bulletin covering the three models, F-5137-65-72-82.

MARION METAL PRODUCTS CO.
Marion, Ohio, U.S.A.



The top plate is connected to the top of the cylinder before the body is installed. Then as the body is let down, the cylinder will guide itself into place in the cylinder housing. The body is then secured from the outside at the top by two bolts that fasten the body to the top plate.



For more facts, use Request Card at page 18 and circle No. 519

J-30 with hydraulic V conveyor boosts trench production 200%

This Cleveland J-30, digging heavily gravelled frost to 30" depth, helped Industrial Maintenance Co. of Lansing *triple* daily trench production for conduit installation at Battle Creek, Mich. The job was well pointed because of a 3½′ water table.

The J-30's V conveyor—hydraulically shifted, controlled at operator's seat—discharged spoil to far side of the well point system (above) or to near side (right) without interrupting digging or crawler's forward movement. Dual independent hydraulic drives gave operator fingertip control of conveyor speeds and discharge direction.

The J-30's long-lived, 1,000-hour-lubricated track has double-flanged sprockets, rollers and wheels, drives on each end of 1½" hardened pins. Operators particularly like the trencher's balance on its long crawlers, and its easy steering and maneuverability with big 16" x 3" hydraulic brakes. Digging range is 13" to 24" wide, down to 5½′ deep.

Get Bulletin L-104 on Cleveland "J" trenchers from your distributor or write:

The CLEVELAND TRENCHER Co.
20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere

For more facts, use Request Card at page 18 and circle No. 520

Rebuilding machine—a folder on the Multi-Matic rebuilder, an automatic welder for rebuilding and hard-surfacing track rollers, idlers, roll rubbers, sprockets, jaws, end bits, tractor and shovel pads, and many others. Photographs; specifications. Write to the Automatic Welding Co., Dept. C&E, Airport Road, Waukesha, Wis., or use the Request Card at page 18. Circle No. 70.

Asphalt, paving equipment—a catalog covering the construction and operating characteristics of Iroquois asphalt plants, pugmill mixers, dryers, paving-plant equipment, and paving tools. Photographs and drawing illustrate text. Specifications included. Bulletin No. 1000.

Write to Posey Iron Works, Inc., Iroquois Division, Dept. C&E, 560 S. Prince St., Lancaster, Pa., or use the Request Card at page 18. Circle No. 75.

Concrete, masonry admixtures—a folder giving complete and detailed information covering the usage of all major Master Builders concrete and masonry products. Includes data on estimating needs for, and description of, Pozzolith, Embeco, Masterplate, Anvil-Top, and others. Bulletin X-5A.

Write to The Master Builders Co., Dept. C&E, 7016 Euclid Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 59.

Electric generating plants—an illustrated bulletin describing the Jeta line of 20-kw electric generating plants. Includes complete specifications for these units, plus a listing of optional accessories available with all Jetapower plants.

Write to Jeta, Inc., Dept. C&E, 957 Saw Mill River Road, Yonkers, N. Y., or use the Request Card at page 18. Circle No. 93.

Tractor shovel—a specification bulletin on the new Trojan Model 304 tractor shovel that has a carrying capacity of 2 to 4 yards. Also gives data on optional equipment.

Write to The Yale & Towne Mfg. Co., Trojan Division, Dept. C&E, Clinton St., Batavia, N. Y., or use the Request Card at page 18. Circle No. 171.

Slurry pump—a bulletin describing capacities and ranges of the Morris CK solids pump. According to the literature, this centrifugal unit is designed to handle fluids containing random-size solids and highly abrasive materials. Bulletin 189.

Write to the Morris Machine Works, Dept. C&E, 20 E. Genesee St., Baldwinsville, N. Y., or use the Request Card that is bound in at page 18. Circle No. 86.

Bucket teeth—an illustrated booklet on H & L points for all types of excavating equipment. Lists units required for most makes and models.

Write to the H & L Tooth Co., Dept. C&E, 1540 S. Greenwood Ave., Montebello, Calif., or use the Request Card at page 18. Circle No. 132.

Vibrating feeders — a 32-page catalog containing descriptions and specifications for the complete Syntron line of 6 small-capacity, 4 heavy-duty, and 3 extra-heavy-duty standard electromagnetically vibrated vibrating feeders. Also presents data on 3 pneumatic and hydraulically vibrated feeders for explosive materials or dangerous atmospheres. Illustrates many typical installations and gives a variety of application diagrams.

Write to the Syntron Co., Dept. C&E, 430 Lexington Ave., Homer City, Pa., or use the Request Card at page 18. Circle No. 145.

Filing systems—a catalog covering Plan Hold vertical and roll filing equipment. Is well illustrated with photographs, gives specifications.

Write to the Plan Hold Corp., Dept. C&E, 5204 Chakemco St., South Gate, Calif., or use the Request Card at page 18. Circle No. 90.

Concrete-insert adapter plugs—a brochure describing a new line of PD concrete-insert adapter plugs said to make it possible to position PD concrete inserts on wood forms with a single nail fastening before concrete is placed. Contains specifications for 7 sizes of these inserts, from ¼ to ⅜ inch, for making all types of fastenings to precast or prestressed concrete using standard machine bolts.

Write to Star Precision Devices, Inc., Dept. PR, Dept. C&E, Mountainville, N. Y., or use the Request Card at page 18. Circle No. 154.

(*Continued on next page*)

NF

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★ SOUND QUALITY
★ SUPERIOR FINISH
★ SOLID VALUE

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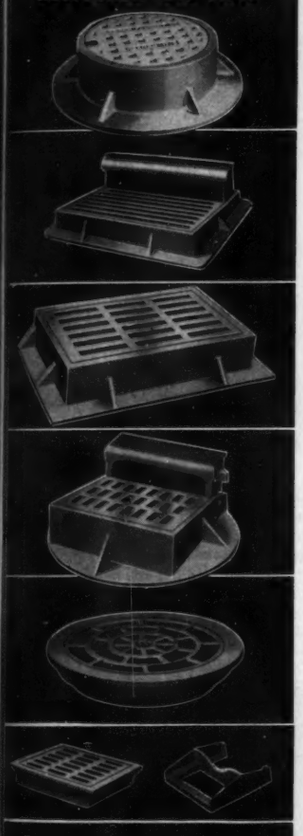

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NEENAH FOUNDRY COMPANY
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Dragline for Sale

Marion dragline — Model 360, serial number 6171. Electric power by G.E. 435 hp motor, 2300 volt. 175-foot boom with one 8 cu. yd. and one 10 cu. yd. drag buckets. Location 10 miles southwest of Kinder, La., within one mile of railroad connections or 5 miles of navigable river. Operating when shut down. Offered for immediate disposition.

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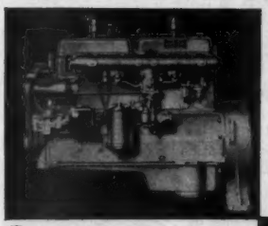
MARION TRUCK-CRANE with two

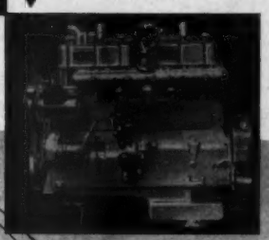
WAUKESHA ENGINES

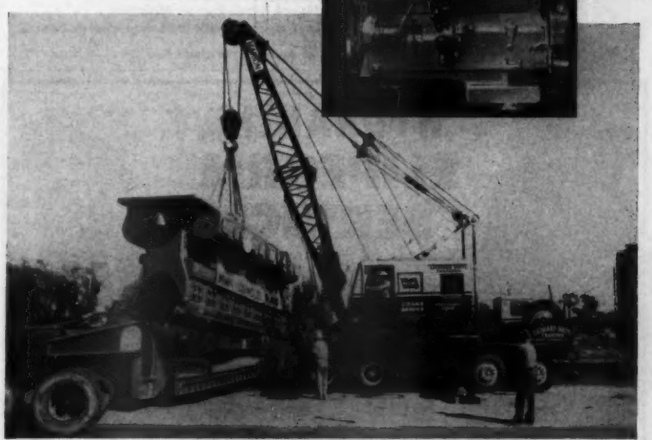


Powering the Carrier—145-GKB Waukesha Gasoline, six cylinders, 5¼-in. x 6-in., 779 cu. in. displ.

▼

▲ Powering Crane (boom)—140-GK Waukesha Gasoline, six cylinders, 4½-in. x 5½-in., 525 cu. in. displ.





Leonard Bros. Transfer of Miami—one of Florida's largest truck-crane users—has worked a wide variety of jobs quickly *and profitably* with their Marion Type 43-M mobile truck-crane. The upper frame has a Waukesha 140-GK Engine and Twin Disc torque converter; the Henderson Carrier has a 145-GKB Waukesha Engine. The truck crane is shown unloading a 2700 hp Diesel engine from railway flat cars to carry-all truck, later unloaded at power plant in Sebring, Florida. The huge engine with its two components, weighing 34½ tons and 31½ tons, took two separate lifts. Seven parts of line were used with the 43-M's basic 30 ft. boom working at a close radius. Get Engine Bulletins 1548 and 1553.

WAUKESHA MOTOR COMPANY, WAUKESHA, WISCONSIN

NEW YORK TULSA LOS ANGELES

Factories — Waukesha, Wisconsin, and Clinton, Iowa 431

For more facts, use Request Card at page 18 and circle No. 523

Base stabilization—a revised edition of Manual SM-1, "Calcium Chloride for Stabilization of Bases and Wearing Courses." Deals with properties and design, types and methods of construction, and specifications. Well illustrated with photographs.

Write to the Calcium Chloride Institute, Dept. C&E, 909 Ring Bldg., Washington 6, D. C., or use the Request Card at page 18. Circle No. 9.

Backhoe—a folder detailing the design and operating characteristics of the Hy-Hoe Model 380 all-hydraulic backhoe. Stresses such features as fast operating cycle, ⅜-yard bucket, simple controls, full smooth swing, and many others. Illustrated with on-the-job photographs.

Write to the Hydraulic Machinery Co., Dept. C&E, 3629 W. Elm St., Milwaukee, Wis., or use the Request Card at page 18. Circle No. 96.

Crane-excavators—a bulletin covering the new Series 350 Bantam crane-excavators. Includes complete specifications, capacities, and work ranges on the 11-ton carrier-mounted Model T-350, the 11-ton self-propelled Model CR350, and the Model C-350 crawler-mounted Bantam, as well as the complete line of attachments. Bulletin No. 350-1.

Write to the Schield-Bantam Co., Dept. C&E, 219 Park St., Waverly, Iowa, or use the Request Card at page 18. Circle No. 127.

Portable vehicle scale—a fact sheet on the heavy-duty Model M-1 Loadometer. According to the literature, this unit has a capacity of 70,000 pounds. Method of weighing is detailed with text and photographs. Brief specifications included.

Write to the Loadometer Corp., Dept. C&E, 1503 W. 41st St., Baltimore 11, Md., or use the Request Card at page 18. Circle No. 95.

Resin adhesives for concrete—a technical bulletin on Thiokol LP-3/epoxy resin adhesives for bonding concrete. Mainly concerned with test results, it is illustrated with graphs and charts.

Write to the Thiokol Chemical Corp., Dept. C&E, 780 N. Clinton Ave., Trenton 7, N. J., or use the Request Card at page 18. Circle No. 139.

Subsoil exploration—a bulletin on the Michimho Vibro-ground, a portable, easy-to-use instrument for determining actual subsoil conditions without extensive, costly test borings. Uses case studies to show exactly how the data was gathered and explains the basic theory, which is derived from the earth's conductance. Bulletin 1-60.2.

Write to Associated Research, Inc., Dept. C&E, 3777 W. Belmont Ave., Chicago 18, Ill., or use the Request Card at page 18. Circle No. 166.

Versatile post driver—an illustrated fact sheet on the Sterling steel post driver designed to dig the hole and set or drive the post with one unit. General specifications furnished.

Write to the Valley White Truck Co., Wyoming Valley Equipment Division, Dept. C&E, 714 Wyoming Ave., Kingston, Pa., or use the Request Card at page 18. Circle No. 167.

Power broom—a fact sheet on the Flaherty self-propelled Broom-Master power broom. Gives data on the unit's optional 8-foot moldboard attachment. Specifications, photographs included.

Write to Flaherty Mfg., Inc., Dept. C&E, P. O. Box 1042, Pocatello, Idaho, or use the Request Card at page 18. Circle No. 174.

Concrete-curing, sealing compound—a brochure containing application and test data on Kure-N-Seal, a compound for curing, sealing, and dustproofing newly placed concrete surfaces in one operation. Illustrated with photographs. Brochure BP 1071.

Write to L. Sonneborn Sons, Inc., Building Products Division, Dept. K, Dept. C&E, 404 Fourth Ave., New York 16, N. Y., or use the Request Card at page 18. Circle No. 115.

Tractor-scraper unit—a booklet describing the improved features and production of the new Cat DW21 Series G tractor and No. 470 Series B scraper. Also contains a number of photos showing the machines being worked under widely varying soil and climatic conditions. Form No. D915.

Write to the Caterpillar Tractor Co., Dept. C&E, Peoria, Ill., or use the Request Card at page 18. Circle No. 68.

Air-cooled diesels—a bulletin describing the new Hercules line of German-built Jlo lightweight, 2-cycle air-cooled diesel engines. Provides a detailed description of the 7-hp Jlo-325 and 12-hp Jlo-660, along with dimensional drawings, performance curve charts, sketches of typical uses, and a list of more than 70 suggested applications.

Write to the Hercules Motors Corp., Dept. C&E, 101 11th St. S. E., Canton, Ohio, or use the Request Card at page 18. Circle No. 125.

Hoe-bucket ripper — illustrated literature describing the Rapid Ripper, a hoe-bucket attachment reportedly capable of ripping through 30 inches of solidly frozen ground in 30 minutes. Installation data included.

Write to the Rapid Ripper Mfg. Co., Dept. C&E, 4½ Mile Road, Racine, Wis., or use the Request Card at page 18. Circle No. 31.

Asphalt emulsion plant—a bulletin describing the Charlotte colloid mill for the manufacture of emulsified asphalt. Contains complete plant layout and gives data on recommended auxiliary equipment.

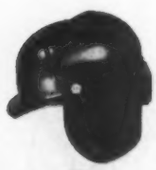
Write to Chemicolloid Laboratories, Inc., Dept. C&E, 55 Herricks Road, Garden City Park, N. Y., or use the Request Card at page 18. Circle No. 113.

Pneumatic concrete guns — a catalog describing the complete line of Blastcrete guns for the pneumatic application of concrete products. Well illustrated with drawings and on-the-job photographs.

Write to the Blastcrete Co., Inc., Dept. C&E, 323 E. 58th St., Los Angeles 11, Calif., or use the Request Card that is bound in at page 18. Circle No. 42.

Concrete vibrators—illustrated literature on the Elliott Tremix concrete vibrator said to offer a 12,000 to 20,000-vibration-per-minute frequency with a flexible-shaft speed of 3,600 rpm. Gives specifications on Rollweight heads, power units, and flexible shafts.

Write to the Elliott Mfg. Co., Construction Equipment Division, Dept. C&E, 350 State St., Binghamton, N. Y., or use the Request Card at page 18. Circle No. 147.



All Jackson Safety Caps—

The Life Guard Cap, the fiber glass cap and the Alumicap allow pivoting of arc welding helmets, goggles and face shields from factory-installed brackets:

- **Cap-and-Helmets** with choice of three fiber glass helmet styles and three styles of glass holders.
- **Cap-and-Goggles** with three types of goggles for gas welding and grinding.
- **Cap-and-Face Shields** with plastic visors in various sizes, thicknesses, clear and in tints of green, a wire mesh and a welding lens visor.

All Jackson Safety Hats—

- **Face Shield F-1** fits the three types of Jackson hats. Two aluminum frame parts, pivoted together, hug the hat brim, are firmly held by elastic band. Same choice of visors as described above for Cap-and-Goggles.

Jackson Products

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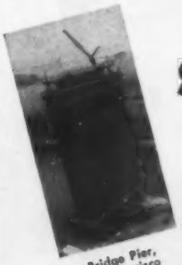
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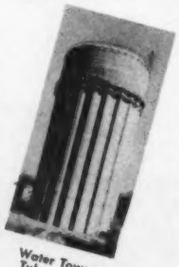
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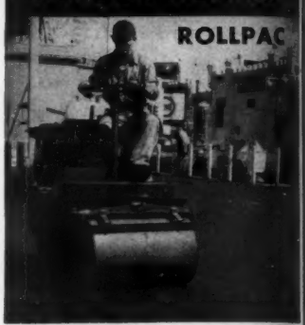

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That's why thousands of contractors, landscapers, institutions and others make Rollpac their "number one" unit. One week on *your* job will prove to you why Rollpac is the top selling one-ton roller in the United States.

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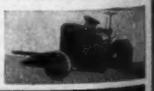

ROSCO MANUFACTURING CO.

ROLCOR DIVISION

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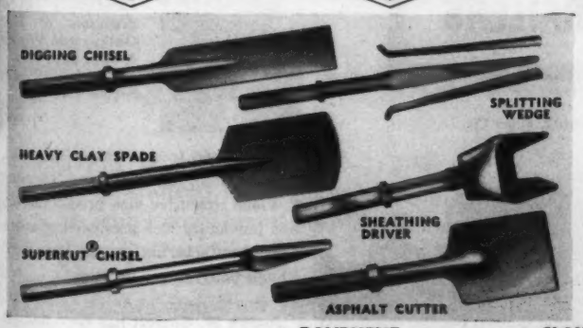

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Manufacturer memos

Two vice presidents have been elected by **Raymond International Inc.**, New York City. **G. William Bailey**, former chief engineer, will take charge of the newly established heavy-construction division, organized to manage special domestic construction projects.

Warren N. Riker, who joined the firm in 1946 as chief engineer, has served as project manager, since 1957, on special construction work in the Middle East.

The firm has appointed **Ernst W. Spannhake** director of research and engineering. In his newly created post, Spannhake will be responsible for the design and improvement of equipment and machinery used by Raymond in its pile-driving, construction, pipe-lining, and manufacturing operations. He will also be in charge of development of new products.

Warren N. Riker, left, and G. William Bailey, new vice presidents of Raymond International Inc.

The West Allis pump department of the General Products Division, **Allis-Chalmers Mfg. Co.**, Milwaukee, has appointed **Hugh L. Ross** manager and **Homer P. Binder** consultant. Ross previously had been assistant manager of the centrifugal-pump department for the past four years. He holds various centrifugal-pump patents.

Binder had been manager of the department since 1942.

Allis-Chalmers de Mexico, S. A., de C. V., has appointed **J. E. Despins** manager of the Mexico district. He succeeds **R. B. Rodriguez**, who retired.

Williams Form Engineering Corp., Grand Rapids, Mich., has appointed **Lincoln Harvey** international engineering representative. Harvey, who will have headquarters in the company's new international office in Nassau, Bahamas, will cover the market for Williams products in Asia, South America, Germany, and the United States.

Lincoln Harvey, international engineering representative for Williams Form Engineering Corp.

With the purchase of **Dorsey Trailers**, Elba, Ala., by **The Dorsey Corp.**, New York City, a new roster of officers has been elected to the former company.

Oliver De G. Vanderbilt III, president of The Dorsey Corp., which has acquired Dorsey Trailers.

J. V. Wright has been elected president of Dorsey Trailers and vice president of The Dorsey Corp. **T. K. Dorsey** is the newly elected executive vice president of Dorsey Trailers; **H. Horton Fick**, vice president in charge of sales; **George Collier**, secretary-treasurer; **Newell P. Crawford**, vice president and assistant secretary-treasurer; **R. A. Sewell**, vice president in charge of manufacturing; and **N. M. Norman**, vice president in charge of engineering.

J. V. Wright, vice president of The Dorsey Corp. and president of its subsidiary, Dorsey Trailers.

The acquired company will operate as a subsidiary of The Dorsey Corp. No changes are planned in product lines, but research and development will be expanded.

Thomas F. Flood, executive vice president of The Galion Iron Works & Mfg. Co.

The Galion Iron Works & Mfg. Co., Galion, Ohio, has appointed **Thomas F. Flood** executive vice president. He was previously vice president of sales and manufacturing for the Frank G. Hough Co.

Joseph W. Garrett has been named to succeed **George A. Meekes**, who has retired, as vice president—commercial of the **U. S. Steel Export Co.**, subsidiary of **U. S. Steel Corp.**, Pittsburgh. Garrett was formerly general manager of distribution and service.

The parent company has appointed **J. Douglas Darby** vice president and assistant to the president.

NEW FRUEHAUF "AIRSLIDE"* PRESSURE TANK-TRAILER

...Unloads 120 Barrels In 36 Minutes!

FASTER UNLOADING and lower equipment cost are the two big assets of Fruehauf's new "Airslide" Pressure Tank-Trailer for bulk cement and other powdered commodities.

This economical unit is capable of pumping aerated cement at a rate of 3.33 barrels per minute for a distance of 105 feet or more, including up to 85 feet upwards into storage elevators. The Trailer has a 105 to 120 barrel capacity, and is equally suited to many powdered solids. Pneumatic unloading through a 4-inch hose at 11 pounds pressure is accomplished either with a tractor-mounted blower connected to the power take-off shaft or with a gasoline engine mounted on the Trailer.

Now, unloading is easy and economical anywhere, because cross conveyors and bucket elevators are not needed with this new Fruehauf. Discharge acceleration is easily controlled manually by a wheel-type valve. For full details at once, write Fruehauf Trailer Company, 10949 Harper Avenue, Detroit 32, Michigan.

FRUEHAUF TRAILERS

*"*Airslide*"—*Trademark, Fuller Co.*

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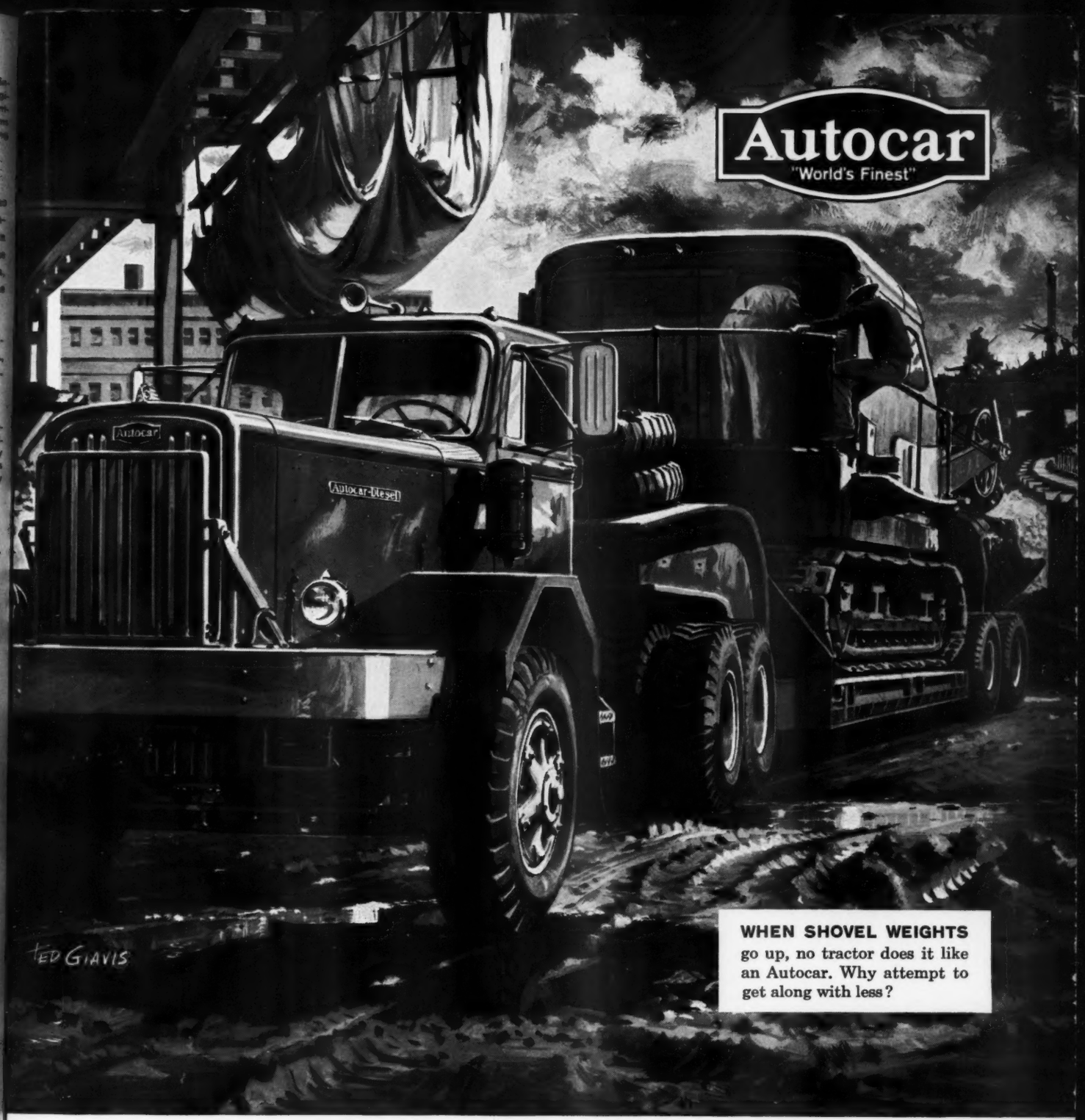

"Easy with an Autocar . . . tough with anything less"

Looking at a job on which you just can't afford a breakdown, anybody who knows about construction and truck-tractors will say, "That's a job for an Autocar."

Autocars won their reputation by what they can do—and *keep* doing . . . hauling shovels and 'dozers to and from construction sites in the least time. Extra size loads are easy for Autocars because of their tremendous power, extra strength in chassis and components. And Autocar has the finest cab in the industry!

All this is because Autocar trucks are custom engineered to the specific job and precision-built to do it longer. Nobody *builds* like Autocar, so nothing matches Autocar. Why not have the "world's finest" and make your profits bigger?

Autocar
"World's Finest"

Division of
The White Motor Company
Exton, Pa.

For more facts, use Request Card at page 18 and circle No. 532

"New" handyman for home-builders

Unusual uses of Michigan Tractor Shovels reduces costs for Montana contractor on wide variety of tasks . . . including digging basements

On the Riverview Terrace housing project in Great Falls, Montana—where William N. Kessner, Inc. is building 150 $150,000 homes per year—a pair of Michigan Tractor Shovels has reduced costs of virtually every material handling operation!

Their versatility has prompted company officials to term the two rigs "as necessary to the home-builder as 2 x 4's."

Yet, not so long ago, Kessner's original Michigan—a Model 75A with two yard bucket—was used *exclusively* for loading spoil into haul trucks. But the machine soon showed it had free time. So it began cleaning spillage off driveways and sidewalks, too. Then Kessner put it to work backfilling around foundations and service lines. Then clearing brush and debris. *Then digging the basements!* (Rig worked so well here, this unusual rubber-tired task has become a Michigan "specialty." Typical basement, 24 x 30 ft by 6 ft deep, through sandy clay and gumbo, takes about three hours to dig and trim.)

The second Michigan, another 80 hp Model 75A, is equipped with a set of forks and assigned primarily to handling the building supplies. It too has produced a major time-saving. Instead of fabricating on the job, carpenters now nail together large wall sections of each home under the ideal working conditions of the shop. Each completed section—loaded by the Michigan fork lift—is trucked to the appropriate site; then unloaded, lifted and held by the Michigan for precision placement on the foundation. For the average house, the four "prefab" walls can thus be set in ¾ hour! The saving? Literally days over customary erect-in-place methods.

There are dozens of time-saving construction uses like these for Michigan Tractor Shovels and their many buckets and attachments (including crane hooks, back hoes, sweepers, backfiller blades, scarifiers). Make a list of material-handling chores you'd like to speed (or make more economical) . . . then ask your Michigan Distributor for a demonstration of each. Judge for yourself. We think you'll like what you see.

Wall section, prefabbed at shop, is steadied in vertical position by Michigan for precision spotting on concrete foundation.

Fork-equipped Michigan Model 75A picks 2,000 board feet off haul truck, delivers it to contractor's carpentry shop.

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